Research Paper

The Relationship Between Fear of Contracting COVID-19 and Academic Motivation, Social Interaction and Psychological Well-being

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ABSTRACT

Background: In the present study, the relationship between the fear of contracting COVID-19 and academic motivation, social interaction, and psychological well-being was investigated.

Methods: The present research was correlational and its population consisted of all the female students in the second year of high school across the four educational districts of Ahvaz. One district was selected, and ten schools were chosen from among the high schools in that district, with 30 students selected through non-probability sampling from each school. Given that ten schools and 30 students from each school were selected, a total of 300 participants took part in this research. To collect data, the following questionnaires were used: The fear of contracting the coronavirus questionnaire, the academic motivation scale (AMS), the social interaction questionnaire, and the psychological well-being questionnaire (PWBQ). The present research was conducted in the second semester of the 2022 academic year. Data analysis was done using Pearson's correlation coefficient and canonical correlation by SPSS software, version 22.

Results: The results showed that there was a significant negative relationship between the fear of contracting COVID-19 and academic motivation, social interaction, and psychological well-being. Also, the results showed that academic motivation with a structural coefficient of 0.85 had the highest correlation, and social interaction with a structural coefficient of 0.78 had the lowest correlation with the variable of fear of contracting COVID-19.

Conclusion: Considering that the spread of COVID-19 left many destructive effects, especially in educational contexts, it is suggested that training courses be developed to address this type of disease. Additionally, to compensate for the educational delays caused by virtual learning, capacity should be utilized to improve academic motivation, social interactions, and the psychological well-being of students.

Keywords: Academic motivation, Coronavirus, Social interaction, Well-being

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Introduction

The novel coronavirus disease has raised concerns about both public health and the mental health of people around the world [1]. Rapid spreading of the infection and high morbidity rates fueled the fear and concerns among the people [2]. The global spread of the coronavirus has had widespread effects on human life, creating numerous issues in economic, scientific, environmental, and personal dimensions [3]. Overall, it has posed significant challenges for the world and, specifically, the education system [4]. To mitigate the spread of the virus, almost all educational institutions and schools in countries were temporarily closed, aiming to limit human interactions and continue remote learning [5]. In other words, among the measures taken by governments worldwide to control the spread of the coronavirus, home confinement was one of the most stringent and led to the suspension of in-person educational activities and the temporary closure of schools [6]. In the same direction, the non-stop spread of the pandemic and serious distancing measures led to the closure of schools and universities in the world, which also affected the mental health of individuals [7, 8]. Educational challenges, the pressure of academic programs, working with infected individuals in clinical settings, financial limitations, and inadequate sleep all contribute to stress and anxiety in students [9, 10]. It seems that measures, such as home confinement in most countries have resulted in demotivation and even academic decline among students [11]. Studies have shown that among the negative consequences of COVID-19, especially in students, are higher levels of depression [12], lower well-being [13], worse sleep quality [14], feelings of loneliness, anxiety, and depression [15-17], and increased substance abuse, alcohol consumption, and eating disorders [18]. It should be noted that in addition to the negative consequences of the COVID-19 pandemic, the increased fear of the disease has been associated with protective health behaviors, such as wearing masks, regular handwashing, social distancing, or a positive attitude toward vaccination [19].

As mentioned before, the fear of contracting COVID-19 has affected all aspects of human life, and in this regard, educational issues, such as academic motivation, social interaction, and psychological well-being have not been immune from the threats posed by this dangerous virus [20]. In the same direction, COVID-19 had significant effects on the academic motivation [21]. A recent cross-country research [6] demonstrated that there was a considerable reduction in the academic motivation of Portuguese and Italian students due to the home restriction period due to the COVID-19 pandemic. Individuals with academic and learning motivation strive to channel their energy toward their goals and satisfy their motivations, values, and personal expectations [22]. Some studies have shown a decrease in academic motivation since the onset of stay-at-home orders [23]. Similarly, Martin's study [24] indicated that quarantine and isolation are associated with academic motivation and engagement difficulties. Anselm Dsouza [25] demonstrated a reduction in academic motivation for most students in online learning due to the prevalence of COVID-19. In this context, some researchers such as Gaeta et al. [26] found different motivational effects among university students in quarantine. Marler et al. [27] showed that academic motivation and a sense of belonging are negatively related to COVID-19-related distress. In this regard, the academic motivation and learning performance of students using online learning methods was lost during the COVID-19 pandemic. Also, the lack of infrastructure to support learning and social support from professors and peers was observed [28].

The fear of contracting COVID-19 has also impacted individuals' social interactions, leading them to prefer social distancing for the sake of their health [29]. The COVID-19 pandemic has brought about dramatic restrictions to real-life social interactions and a shift toward more online social encounters [30]. In total, 38.1% of respondents voluntarily reduced their social interaction with friends to avoid COVID-19 infection, 36.1% voluntarily reduced their interaction with colleagues or classmates, and 11.1% voluntarily reduced interaction with family members [31]. Consequently, the Centers for Disease Control and Prevention [32] cautioned against human gatherings to preserve health. It is natural for people to have an inherent need for social connections [33] because a sense of social belonging adds meaning to life and enhances psychological well-being [34]. In other words, social isolation and social distancing have frequently been reported at the onset of the COVID-19 pandemic [35], resulting in a gradual decrease in social cohesion [36]. Christ and Gray [37] indicated that individuals' social relationships decrease due to the fear they experience. In this context, Azmat and Ahmad [38] showed that the lack of social interaction affects students' life satisfaction and contributes to mental health problems, such as health issues, depression, fear of loneliness, and boredom. It is worth noting that during the COVID-19 outbreak, the way individuals connected shifted from physical methods to virtual ones [39]. In this regard, Archambault [40] revealed significant changes in social interaction methods rooted in the increased use of

technology. Similarly, Calbi et al. [41] demonstrated that the COVID-19 pandemic had a significant impact on social interaction. In other words, quarantine and physical distancing policies during the COVID-19 outbreak have intensified social isolation [42]. In this context, Ellis et al. [43] showed that social isolation was high during the COVID-19 pandemic, and their academic motivation decreased. Similarly, Zhou et al. [44] found that the reduction in social interactions and connections with others during the COVID-19 outbreak is more pronounced in women than in men. Research also suggests that in addition to remote learning, social isolation and lack of social connection during the COVID-19 pandemic may lead to increased feelings of fear, stress, anxiety, and even depression [45].

The fear of contracting COVID-19 has also had a psychological impact on the well-being of individuals [46, 47]. Psychological well-being is defined as a cognitive experience where individuals compare their current situation to an ideal one and strive for positive self-perception. This component includes overall life satisfaction and encompasses a positive attitude toward life, enjoyment in life, and the absence of depressed mood [48]. Psychological well-being can be equated with happiness, joy, and positive emotions in life, where individuals strive to unfold their potential abilities [49]. In this regard, Diaz et al. [47] and Calhoun [50] showed that the COVID-19 pandemic has had a significant impact on mental health, depression, loneliness-related anxiety, and well-being. Similarly, Zhou et al. [44] demonstrated that the pandemic not only brought a high mortality rate due to viral infection but also led to a psychological catastrophe and a decrease in psychological well-being globally. Plakhotnik et al. [51] indicated that personal growth and relationships with others, as components of psychological well-being, were able to predict COVID-19-related anxiety. In this context, Satıcı and Okur [52] revealed a negative effect of the fear of COVID-19 on psychological well-being, social interaction, and optimism. Rettie and Daniels [53] and Shafaq Shah et al. [54] showed a decrease in the level of psychological well-being in individuals with COVID-19. Deniz [55] demonstrated a negative relationship between the fear of COVID-19 and psychological well-being. Additionally, Lathabhavan and Vispute [56] reported that individuals with high fear of COVID-19 experienced a reduction in their level of psychological well-being. It has been reported that fear causes distress in individuals [57] and negatively affects their mental health [58].

Based on this introduction, the present study aimed to investigate whether the fear of contracting COVID-19 affects the academic motivation, social interaction, and psychological well-being of female students during the prevalence of COVID-19. Considering that the spread of COVID-19 has affected everything, particularly educational issues, and recognizing that female students are highly sensitive and more susceptible to this type of disease and its effects on education, it seems necessary to investigate the impact of the COVID-19 on variables such as academic motivation, social interaction, and psychological well-being in female students. By examining these factors, it may be possible to assist teachers and education policymakers in finding ways to address these types of diseases and to understand their long-term effects on educational matters, psychological well-being, and social interactions. Another important aspect of the subject under review is that until now, there has been less research on the effects of COVID-19 on educational issues, especially in girls' schools. In other words, given that students have a high level of susceptibility to diseases and that the consequences of the spread of this disease—particularly regarding educational and social issues, as well as psychological well-being—are less compensable, this research focused on female students as the research sample. Both the level of their cooperation and the accuracy in completing the questionnaire items were high, and there has been limited research on this type of student. Furthermore, the level of involvement and vulnerability of these students to this type of disease is very high. Therefore, investigating these variables in female students can provide a foundation for further studies and help identify educational solutions. Conducting this research can also contribute to the prevention of negative impacts on the educational experiences of female students.

Methods

Procedure

The present study was correlational. The criteria for entry into the study included voluntary participation, female students, and being in the second grade. Incomplete questionnaire completion was a criterion for exclusion from the study. After determining the appropriate statistical sample visiting the selected schools in person and explaining the purpose of the research, the students were asked to carefully complete the questionnaires in the second semester of the 2022 academic year. In addition, to attract more cooperation, they were thanked. It takes about 15 minutes to fill out the questionnaires. Additionally, participants were informed that if anyone did not wish to participate in the research, they could withdraw at any time.

Subjects

The statistical population of the current research was all the female students of the second high school. Among the four educational districts of Ahvaz, one district was selected. Then, ten schools were chosen from among the high schools of this district, and 30 individuals were selected through non-probability sampling from each school. Considering that ten schools and 30 individuals from each school were selected, 300 individuals participated in this research (determined by Morgan's table). Because the level of fear of contracting COVID-19 in female students is high, and their cooperation and patience in working with the researcher are also high, this sample was selected for this reason. It should be noted that this number was selected from among the second-grade high schools (10 schools). The average age of the subjects was 17.04±0.11 years. They were from the middle socioeconomic class and were studying in an experimental field.

Measures

Fear of COVID-19 questionnaire (FCCVQ)

To measure the fear of contracting COVID-19, the questionnaire developed by Mertens et al. [59] was used. The questionnaire, translated by Sevari, consists of nine items and two physiological (5 items) and emotional (4 items) components. It is scored on a 5-point scale from completely disagree (1) to completely agree (5). The overall reliability of the questionnaire was 0.74 according to the aforementioned researchers, and in the current study, the Cronbach's α was 0.78 for the physiological component, 0.70 for the emotional component, and 0.71 for the total questionnaire. The reliability of the questionnaire was found to be 0.75 in a study on high school students [60].

Academic motivation questionnaire (AMQ)

To assess academic motivation, the questionnaire developed by Sevari [60] with 18 items and three components (knowledge acquisition, job finding, and proving abilities) was used. It is scored on a five-point scale from completely agree (5) to completely disagree (1). The overall reliability of this questionnaire was 0.88, and its validity was confirmed through confirmatory factor analysis (incremental fit index [IFI] =0.90, root mean square error of approximation [RMSEA] =0.04).

Social interaction questionnaire (SIQ)

The SIQ by Brady and Cronin [61] was used to measure social interaction. The questionnaire consists of 12 items scored on a five-point Likert scale measuring four dimensions: Respect, attitude, attention, and responsiveness. The reliability of the questionnaire, as reported by its creators, is above 90% for all components. The validity of the questionnaire was confirmed in Iran by Sadeghpour and Ramazannejad [62], and the reliability was calculated using Cronbach's α, resulting in 0.87 for the overall questionnaire.

Psychological well-being questionnaire (PWBQ)

In the present study, the PWBQ by Ryff [49] was used to measure psychological well-being. This questionnaire consists of 18 items scored on a six-point Likert scale. Eight of the items are reverse-scored, and the total score ranges from 18 to 108, with higher scores indicating higher psychological well-being. The questionnaire measures six factors: Autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance. In Iran, the reliability of this questionnaire was between 0.70 and 0.82 using the test re-test method, and its validity was reported as 0.58 through correlation with the Oxford happiness questionnaire. The reliability coefficient of this questionnaire was estimated by Askari et al. [63] to be 0.74.

Data analysis

The data analysis method involved the Pearson correlation coefficient and canonical correlation, with data analyzed using SPSS software, version 22. Because the research consists of one independent variable and three dependent variables, canonical correlation was employed. Furthermore, Pearson's correlation was used to assess the simple correlation between the variables. The significance threshold for all tests was set at $P<0.05$.

Results

Descriptive analysis showed that the mean age of the students was 17.04±0.11 years and their grade point average (GPA) was 16.94±0.14. In addition, the students were studying in the experimental field and had a moderate socio-economic status.

Table 1 shows that the mean value of the fear of COVID-19 was 32.49±4.68, academic motivation was 13.91±1.02, social interaction was 15.53±3.17, and psychological well-being was 23.02±2.12. The results of the

Table 1. Descriptive findings, normality, and correlations of research variables

Variables	Mean±SD	Normality Results		Correlation Results			
		K-S	P	1	2	3	4
1. Contracting COVID-19	32.49±4.68	0.69	0.72	1			
2. Academic motivation	13.91±1.02	1.05	0.22	-0.83*	1		
3. Social interaction	15.53±3.17	0.67	0.75	-0.80*	0.71*	1	
4. Psychological well-being	23.02±2.12	1.22	0.10	-0.73*	0.63*	0.59*	1

*P<0.05.

Smirnov-Kolmogorov test also indicated the normality of the research variables (P>0.05). Additionally, the results showed a significant negative correlation between fear of COVID-19 and academic motivation (r=-0.83, P=0.05). In other words, as the fear of COVID-19 increases, academic motivation decreases. There was also a significant negative correlation between fear of COVID-19 and social interaction among students (r=-0.80, P=0.05). In other words, as the fear of COVID-19 increases, social interaction decreases. The findings further demonstrated a significant negative correlation between fear of COVID-19 and psychological well-being among students (r=-0.73, P=0.05). In other words, as the fear of COVID-19 increases, psychological well-being decreases. Based on Table 2, the first to third hypotheses of the research were confirmed.

In this study, the tolerance statistic and the variance inflation factor for the variable of fear of contracting COVID-19 were 1.18 and 1.51, respectively. Therefore, the assumption of multicollinearity has been observed. In addition, the Durbin-Watson's test was used to check the independence of errors, and the value obtained was 2.05. Since the value was in the range of 1.5-2.5, it indicates compliance with the assumption of independence of errors.

The results showed that all three criterion variables (social interaction, academic motivation, and psychological well-being) are predicted by the variable of fear of contracting COVID-19. This variable explains 31% of the variance in all three variables.

As shown in Table 3, the significant value of Wilks' Lambda (0.30) indicated a significant relationship between the two sets of variables (predictor variable and criterion variables). Lambda represents the variance not explained by the model. Therefore, the Wilks' Lambda index can be considered a measure of indeterminacy. Subtracting the indeterminacy coefficient from one gives the coefficient of determination or the amount of variance determined by the complete model. In this study, this value was 0.69, indicating that the model explained 69% of the variance between the independent variable and dependent variables.

As seen in Table 4, the squared canonical correlation coefficients for the functions were 0.47 and 0.005, respectively. Therefore, the first function, explaining 99.47% of the shared variance, was interpretable, while the second function was not interpretable.

Table 2. Prediction of dependent variables based on the fear of contracting COVID-19

Models	Dependent Variables	R	R^2	β	F	P	t	P
1	Academic motivation	0.44	0.19	-0.44	41.23	0.000	-6.42	0.000
2	Academic motivation	0.52	0.27	-0.40	31.63	0.000	-5.95	0.000
	Social interaction			-0.37			-4.87	0.000
3	Academic motivation	0.56	0.31	-0.31	26.03	0.000	-3.91	0.004
	Social interaction			-0.27			-3.76	0.001
	Psychological well-being			-0.23			-3.32	0.000

Table 3. Effect of fear of COVID-19 on academic motivation, social interaction, and psychological well-being using canonical correlation

Effect	Value	F	Hypothesis df	Error df	P
Pillai's trace	0.71	16.75	12	642	0.001
Wilks' Lambda	0.3	26.87	12	561.19	0.001
Hotelling's trace	2.27	39.85	12	632	0.001
Roy's largest root	0.69	-	-	-	-

Table 4. Characteristics of functions resulting from canonical correlation analysis

Function Number	Eigen Value	Percentage	Cumulative Percentage	Canonical Correlation	Squared Canonical Correlation
1	0.9	99.47	99.47	0.69	0.47

Table 5. Standard and structural coefficients for variables in the first function

Dependent Variables	Standard Coefficient	Structural Coefficient
Academic motivation	0.66	0.85
Social interaction	0.55	0.78
Psychological well-being	0.45	0.8
Independent variable	-	
R^2C	-0.69	
Fear of COVID-19	0.39	0.59

Table 5 presents standard and structural coefficients for the set of predictor variables and criterion variables in the first function.

The results in Table 5 indicate that 69% of the variance in academic motivation, social interaction, and psychological well-being can be explained and predicted by fear of COVID-19. Among the dependent variables, academic motivation with a structural coefficient of 0.85 had the highest correlation, and social interaction with a structural coefficient of 0.78 had the lowest correlation with the independent variable. Based on this table, the fourth hypothesis of the study was confirmed.

Discussion

The aim of this research was to investigate the relationship between the fear of contracting COVID-19 and academic motivation, social interaction, and psychological well-being in female second-grade high school students in the Education and Training Organization of District One in Ahvaz.

The results indicated a significant negative relationship between the fear of contracting COVID-19 and academic motivation. These findings are consistent with the results of the studies by Anselm Dsouza [25], Gaeta et al. [26], and Marler et al. [27]. The statistics show that the spread of COVID-19 has become a major concern in most parts of the world, specifically the education system [4]. The prevalence of this disease can create unpleasant emotions, such as fear, anxiety, terror, anger, grief, and loneliness [15-17].

It has been reported that approximately 40% of the general population has experienced some form of mental distress as a result of the COVID-19 pandemic [64]. Individuals who have been exposed to quarantine dur-

ing the pandemic have faced challenges, including dissatisfaction, fear, stress, and burnout due to disruptions in their personal, social, mental, and professional lives [65]. Therefore, it seems that the COVID-19 crisis, with the imposition of various restrictions, such as physical distancing, reduction of students' relationships with teachers, classmates, family, and work, and home isolation, has tremendous negative psychological effects on individuals, affecting cognitive resources, motivation, individual learning strategies, self-regulation, and learner achievements [25]. In this regard, it seems that the actions of most countries, such as house arrest, have caused demotivation and even academic failure among most students [6]. Hence, the academic motivation of students may be jeopardized due to the most extreme form of isolation, namely individual confinement, and the resulting emphasis on individual study [25].

It is clear that in the face of this virus, individuals may feel a loss of control during the experience, perceive their fate as doomed, and become overwhelmed by mental concerns about everything beyond their control. This sense of overwhelm and natural concern is entirely normal but not beneficial, as the feeling of limited control over circumstances, high levels of anxiety regarding the COVID-19 crisis, uncertainty about the educational future, and the disruption of students' educational plans can exacerbate academic fatigue and lead to a decrease in intrinsic motivation [26]. Studies show that the greater the fear of contracting COVID-19, the lower the academic motivation becomes, as this fear undermines a person's physical and mental peace and significantly diminishes their academic motivation [11]. In this regard, the guardians of education and families should strive to establish mental peace and manage their anxiety and fear through their own policies. Otherwise, this fear will permeate all aspects of life, especially educational matters, and, above all, academic motivation, making it difficult to recover. It should be noted that as the fear of COVID-19 increases, individuals may feel a constant anxiety about contracting the illness, which will certainly have a negative impact on their education and academic motivation. In other words, when the fear of COVID-19 is high, educational motivation tends to decrease. Therefore, it is beneficial for students to engage in positive thinking and to understand the factors that can prevent COVID-19. By observing health guidelines and implementing proper curriculum planning, students can be reassured that they do not need to worry excessively about the disease.

It should be said that the academic motivation of students is very important for the educational system of schools. Therefore, it is necessary to identify the factors affecting academic motivation and improve the academic motivation of students by reducing or increasing their effect. According to our research, one of these influencing factors was the fear caused by the spread of COVID-19, which leads to significant disruptions, particularly in the education systems of various countries, directly affecting academic motivation as an inhibiting factor. To mitigate its effects on academic motivation, practical measures (such as strategies for coping with COVID-19) should be developed.

The results also showed a significant negative relationship between social interaction and the fear of contracting COVID-19 among female students. These findings align with the results of studies by Yıldırım et al. [66], Calbi et al. [41], Groarke et al. [35], Ellis et al. [43], Zhou et al. [44], and Hiremath et al. [45]. The current COVID-19 conditions have led individuals to distance themselves from each other emotionally and psychologically. This distancing has caused individuals to become more indifferent to each other, place a higher value on themselves and their lives, pay less attention to others, and engage in fewer interactions. One of the reasons for this lack of connection and interaction with others is the fear of contracting the virus and becoming ill.

In this regard, public health recommendations have suggested avoiding human interaction [32]. Individuals who fear getting sick continuously imagine that anything can cause them illness, leading them to visit doctors frequently. Moreover, when individuals perceive that an illness threatens themselves, their surroundings, family members, and friends, their fear of contracting that illness increases. The fear of getting sick is one of the most distressing obsessions that results in severe anxiety and controlling behaviors toward oneself and others.

The discussion about the illness caused by the coronavirus has generated waves of concern and fear worldwide, especially in Iran, and has had negative psychological effects on public health. It has disrupted many activities, including global trade and travel, and has generally led to a reduction in social interactions worldwide [41]. In this regard, the results of some studies showed that the fear of COVID-19 and its stress significantly negatively predicted social connectedness and significantly positively predicted COVID-19 burnout [67]. Other studies also showed that higher levels of social connectedness were associated with lower levels of COVID-19 stress and burnout. These findings highlight the potential impact of social connections on individuals' experiences during the pandemic, suggesting that fostering social connectedness may serve as a protective factor against

burnout [68]. It is important to note that the COVID-19 pandemic is not only considered a health threat but can also be regarded as a social threat, affecting people's lives and disrupting social interactions.

In the early stages of this pandemic, fear increased in society, and billions of people worldwide began to use quarantine and social distancing measures to minimize virus transmission [6]. Since the onset of the disease, staying at home, especially for non-essential occupations, has been recommended, significantly negatively impacting economic activities in affected countries. Gradually, social interactions decreased to the point where it became a cultural norm, with factors such as social distancing from peers and family members, the closure of hotels, restaurants, and places of worship, and the unavailability of recreational venues like cinemas, sports clubs, and swimming pools leading to increased anxiety among the population, especially among students and scholars. This impact has been more severe for students and their families, as they are forced to distance themselves from educational environments, where most social interactions take place. In this regard, individuals who experienced significant fear and stress related to COVID-19 tended to report lower levels of social connectedness, which was associated with higher levels of COVID-19-related burnout. These findings support the notion that increased fear and stress can contribute to reduced social connectedness and heightened burnout among young adults during traumatic events, such as a global pandemic. The data underscores the importance of promoting social support systems to mitigate the negative impact of pandemic-related stress on mental health outcomes. Strong social relationships can potentially facilitate better coping with burnout symptoms when individuals face challenging circumstances. Overall, students and scholars who are afraid of contracting COVID-19 are less likely to engage in social interactions, primarily due to the psychological pressures stemming from the fear of contracting the virus.

The results also indicated a significant negative relationship between the fear of contracting COVID-19 and psychological well-being. These findings are consistent with the results of Latabhavan [69], Calhoun et al. [50], Zhou et al. [44], and Plakhotnik et al. [51]. The psychological effects of COVID-19 on individuals' mental health at various levels of society are of paramount importance, and one of these levels is psychological well-being. In general, in stressful situations, such as the COVID-19 pandemic, people's fear, anxiety, and stress increase leading to a decrease in their psychological well-being. In other words, to explain this finding, it should be noted that the spread of COVID-19 creates social stress, including fears of losing health, fear of death, fear of losing friends and relatives, fear of job loss, and fear of the unknown in general, which can lead to psychological disorders and increased depression and anxiety in people [68]. In this context, the findings showed that greater fear of COVID-19 had a negative effect on people's emotions and behavior, and is associated with their lower psychological well-being [70]. Also, some studies have shown that there is a negative relationship between the fear of COVID-19 and psychological well-being [71]. In this regard, the results indicated that increased fear of COVID-19 was directly associated with diminished mental well-being, which in turn was associated with a lower quality of life [72]. Most research focuses on the anxiety of patients, but the reality is that during a pandemic, like COVID-19, the fear of illness and death, along with the disruption of daily activities, causes even healthy individuals to experience anxiety and jeopardizes their psychological well-being. Students, due to academic pressure, night shifts, and lack of sleep, experienced a significant mental burden during the COVID-19 period, affecting their mental health [73]. In this regard, education policymakers and stakeholders should strive to provide practical training courses in positive psychology, including teaching resilience against life events and reducing the fear of contracting COVID-19, which will improve students' psychological well-being.

The canonical correlation analysis showed that the fear of contracting COVID-19 could explain 69.9% of the variance in academic motivation, social interaction, and psychological well-being. Among the dependent variables, academic motivation had the highest structural coefficient of 0.85, while social interaction had the lowest, with a coefficient of 0.78 in relation to the fear of COVID-19.

Conclusion

Given that COVID-19 led to the closure of most human activities, including education, our research showed a significant negative relationship between the fear of contracting COVID-19 and academic motivation, social interaction, and psychological well-being. Also, the results showed that academic motivation with a structural coefficient of 0.85 had the highest correlation, and social interaction, with a structural coefficient of 0.78 had the lowest correlation with the fear of contracting COVID-19. The findings of the current research showed that COVID-19 affected all human affairs, including educational affairs, psychological well-being, and social relations, casting a shadow over everything. The

spread of this disease has led to a decrease in students' academic motivation due to the lack of physical presence in educational environments and communication with schools occurring solely through virtual platforms. Face-to-face social interactions have been replaced by virtual communication, resulting in a gradual weakening of their mental well-being. The novelty of this study lies in the recognition that providing a safe educational environment for students is one of the primary objectives of the educational process during wartime conditions and lockdowns.

Study limitations and recommendation

Since the current research was conducted on students, the results obtained may not be directly applicable to other communities. In addition, as the study focused on second-grade students and the experimental field, the results should be generalized to other populations with caution.

Further research is suggested to include additional psychological variables among students and to examine the impact of the fear of COVID-19 on various psychological aspects within student populations. Comparative studies are recommended to assess the validity of the present research variables in different cultural contexts. Attention to the dimensions of students' lives and their families, as well as factors influencing academic motivation and psychological well-being is recommended. Educational programs aimed at enhancing social interactions for students are also suggested. The findings of this research can be utilized in intervention and educational programs to enhance psychological well-being and social interactions for individuals and students.

In this context, the role of education policymakers and educational institutions is to strive to incorporate low-cost, high-quality virtual education into their programs to compensate for the losses caused by COVID-19 in learning and to maintain academic motivation, with the support of stakeholders.

Considering that the results of some studies have shown that the level of vulnerability among female students due to diseases such as COVID-19 is high, resulting in reduced levels of academic motivation, psychological well-being, and social interaction, the present research suggests identifying areas to mitigate the impact of this disease and taking more practical steps to improve psychological well-being, academic motivation, and social interaction. Given the restrictions imposed by the Ministry of Health and the necessity to comply with them, it is recommended to create engaging social programs on social networks and media to help individuals overcome loneliness and foster hope. Additionally, people have been encouraged to participate less in social gatherings and to maintain social distancing to protect their health. Broadcasting attractive and varied movies, Additionally, people have been encouraged to participate less in social gatherings and to maintain social distance to protect their health. Also, the introduction of shopping centers and the provision of comprehensive non-attendance services can help reduce large gatherings.

In this regard, the role of education policymakers and educational centers is to strive to include low-cost, high-quality virtual education in their programs to compensate for the learning losses caused by COVID-19 and to maintain academic motivation, with the support of stakeholders. Health authorities should aim to provide useful and practical training to deal with diseases, such as COVID-19, and emphasize social distancing and avoiding unnecessary presence. Among the suggestions that schools can implement to reduce the effects of COVID-19 are: Issuing permissions for students to stay home in case of illness, emphasizing regular hand washing with soap at school, promoting social distancing, developing educational workshops on infectious diseases, enhancing psychological empowerment, strengthening mindfulness, designing and planning intervention and support strategies, and providing counseling interventions.

Ethical Considerations

Compliance with ethical guidelines

This study was approved by the Research Ethics Committee of Payame Noor University, Tehran, Iran (Code: IR.PNU.REC.1402.145).

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Conflict of interest

The author declared no conflict of interests.

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