



Investigation of Correlation between Coronavirus Anxiety, Academic Motivation and Attitude towards the Field Education in Medical Students

SARAMOHAMMADNEJAD^{1#}, MSc; RAZHANCHEHREH^{1#}, PhD; ZOLAYKHAKARAMELAHI^{1,2*}, MSc; BATOL SOLAIMANNZHAD¹, MSc

¹School of Nursing and Midwifery, Ilam University of Medical Sciences, Ilam, Iran; ²Clinical Research Development Unit 5azar Hospital, Golestan University of Medical Sciences, Gorgan, Iran; [#]The authors contributed equally to this work.

Abstract

Introduction: Coronavirus pandemic has created a wide range of psychological complications. Students of medical sciences, like health personnel, are at a high risk of infection with coronavirus. The present study is an attempt to examine the correlation between anxiety caused by coronavirus and attitude and motivation toward the field of study in medical sciences students at Ilam University of Medical Sciences.

Methods: This correlational study was done on 373 students in different fields of medical sciences at Ilam University of Medical Sciences from April to September 2020. The participants were selected through stratified random sampling. Data gathering was done using Corona Disease Anxiety Scale (CDAS), Academic Motivation Scale (AMS), and Educational Attitude Standard Questionnaire. The questionnaires were completed online by the participants. The data were analyzed using SPSS software and Pearson's correlation test, independent t-test and analysis of variance at a significance level of ($P < 0.05$).

Results: Based on the Pearson correlation coefficient, the relationship between COVID-19 anxiety and educational motivation ($P = 0.001$) and attitude ($P = 0.03$) was inverse and significant. There was a significant statistical difference in the average score of anxiety caused by coronavirus in students of different fields. The highest mean anxiety score was in the operating room students and the lowest anxiety score was in the laboratory science field ($P = 0.001$).

Conclusions: Coronavirus pandemic has created anxiety and lowered educational motivation and attitude in students of different fields of medical sciences.

Keywords: Coronavirus, Anxiety, Attitude, Education

**Corresponding author:*
Zolaykha Karamelahi, MSc;
Department of Midwifery,
School of Midwifery and
Nursing,
Ilam University of Medical
Sciences,
Ilam, Iran
Tel: +98-9183408521
Email: mohamad20101@gmail.com

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Introduction

COVID-19 was first found in Wuhan, China in December 2019. According to the World Health Organization (WHO), the disease has been turned into a pandemic, causing widespread fear, worry, and anxiety in the world

(1). Currently, all countries around the world are affected by the diverse consequences of the disease. COVID-19 pandemic creates stress and anxiety in individuals for a wide range of reasons. Hearing worrying news about the mortality rate in the world, long-term lockdowns, social

distancing, and the fear of infection are all the causes of anxiety (2). The non-stop spread of the pandemic and serious distancing measures led to closure of schools and universities in the world, which also affected mental health of individuals (3, 4). Educational issues, pressure of the programs, working with infected individuals at clinical settings, financial limitations, and inadequate sleep all create stress and anxiety in students (5, 6). In addition, students of medical sciences have a higher risk of being infected with COVID-19 during the pandemic just like health personnel (7). The fear of transmitting the virus to family members is another stressor and cause of anxiety in these students (8, 9). Although people face diverse forms of anxiety in their lives, some factors might create higher levels and illness-like forms of anxiety, which can affect their functional aspects such as perception, memory, and learning capabilities (10). One of the key factors that have affected education systems in the world since early 2020 was COVID-19 pandemic. Currently, we do not have information about the effects of the pandemic on health systems in different countries. The education systems have also been affected by COVID-19 pandemic, but the point is that studies rarely focus on the effects of the disease on education. Issues like disorders in education and learning due to closure of schools and limited accessibility to educational facilities are the effects of the pandemic on education systems in different countries (11, 12). Taking into account that different health and treatment fields have a profound role in improving health in society and expert health workers in different fields are the frontline providers of health care service in society, facing pandemics like COVID-19 can affect educational attitude and motivation in students of these fields. It is clear, then, that given the importance of health educational fields in prevention of diseases, studying these students' motivation and attitude about their field of study is valuable. It is important, therefore, to realize such attitude, motivation, and the factors and utilize them to improve the medical profession and health policy making and programs (13). Students' attitude about their field of study is a factor that, when positive, creates desire and the will to continue the program and even enter higher levels. On the other hand, a negative attitude about the field of study or expecting an uninteresting future in terms of career and socioeconomic status can decrease the desire and motivation for continuing the course and this negatively affects academic achievements (14, 15). Educational motivation along with a

positive attitude toward the field of study can affect educational achievement of students. Learners with strong educational achievement motivation prefer perfection and improve their performance. Anxiety affects educational motivation, and the problem-causing anxiety can have a negative impact on one's capabilities, which can appear in different forms. In students, anxiety at a higher level can lead to lower educational performance and even dropout (10). There is a paucity of studies on COVID-19 pandemic and its effects on education systems and educational performance of students of medical sciences and about its mental effects on educational attitude and motivation. Given the fact that students of medical sciences, nursing, midwifery, and paramedicine become members of medical teams in the future, the present study is an attempt to examine the correlation between the COVID-19 anxiety and its relationship with educational attitude and motivation in medical science students. The study tries to identify the cases of severe anxiety caused by coronavirus and changed attitudes in students about their field of study.

Methods

This descriptive and cross-sectional study was done to examine the correlation between the anxiety caused by COVID-19 and motivation and attitude about the field of study in medical sciences students in Ilam University of Medical Sciences. Sampling was carried out through stratified random sampling so that each field of study was considered as a stratum and the participants were selected randomly from each stratum. To calculate the sample size, 273 individuals were calculated from the correlation formula at the confidence level of 0.95 and the statistical power of 80% and the correlation value of 0.14 (16):

$$n = \frac{(z_{1-\alpha/2} + z_{1-\beta})^2}{\left(\frac{1}{2} \ln \frac{1+r}{1-r}\right)^2} + 3$$

Taking into account attrition, 373 participants were selected. The inclusion criteria were the willingness to participate and enroll in the current semester. In addition, the exclusion criteria were unwillingness to participate, being in the process of graduation, and being first semester students. It is notable that, to observe social distancing regulations, the questionnaires were completed online by the participants.

After completing the demographic information form (age, gender, ethnicity, nationality, semester,

field, socioeconomic status, housing status), the anxiety caused by COVID-19 and motivation and attitude about studying were measured using the following tools.

Coronavirus Disease Anxiety Scale (CDAS):

The tool was designed and validated to measure the anxiety caused by COVID-19 in Iran by Alipour, et al. (2019). The final version of the tool has 18 items with two aspects. Items 1–9 measure mental symptoms and items 10–18 measure physical symptoms. This tool is designed based on Likert's four-point scale (never; sometimes; most of the time; and always). Therefore, the maximum and minimum possible scores are 0 and 54, respectively. Higher scores indicate a higher level of anxiety in individuals. Alipour, et al. (2020) used Gutman and Cronbach's alpha methods to examine reliability of the tool (Gutman' coefficient for the whole tool was 0.992 and Cronbach's alpha for psychological symptoms, physical symptoms and the whole tool was 0.879, 0.861, and 0.919, respectively). In addition, face and content validity indices were confirmed (17).

Academic motivation scale (AMS): The scale was introduced by Warland, et al. (1992) based on self-determinism theory including 28 seven-alternative items. The scale contains three subscales of internal motivation (12 items), external motivation (12 items) and lack of motivation (4 items). The items are scored based on a seven-point scale so that alternative one indicates complete disagreement, alternative two-six represent a spectrum from low agreement to high agreement and alternative seven indicates a complete agreement. Therefore, the alternative four is at the middle of the spectrum (18). Reliability of the tool based on Cronbach's alpha for the subscale internal motivation, external motivation, and lack of motivation are 0.84, 0.86, and 0.68, respectively. In addition, face and content validity of the tool are supported (19).

Students' Attitude Standard Questionnaire (SASQ)

about field of study and future of career: This questionnaire is designed for measuring attitude toward education and career in future. The tool contains 11 questions and 3 aspects of interest in the field of study, career in future, and career planning. The items are designed based on Likert's five-point scale. The tool was normalized in Iran and the face and content validity indices were supported. Cronbach's alpha of the tool is equal to 0.70 (20).

Ethics committee approval

This study was approved by the Research Ethics Committees of Ilam University of Medical

Sciences, Ilam, Iran with the code of IR.medilam.rec.1400.117. The present study is based on a study plan approved by the Research and Technology Department of Ilam University of Medical Sciences. The budget for the study was provided by the afore-mentioned department. A written informed consent was signed by all participants.

Statistical analysis

The participants were asked to verbally express consent to participate and then the objectives of study were explained briefly to them. Totally, 373 questionnaires were completed online by the students. The collected data was analyzed in SPSS (SPSS; IBM version 19) using descriptive statistics t-test, analysis of variance, and Pearson Correlation Coefficient ($P < 0.05$).

Results

The study was carried out on 373 students in different fields of medical sciences. The majority of students were in the 20-25 age range (60.9%) and 153 (41%) were boys and 220 (59%) were girls. As to marital status, 345 (92.5%) were unmarried. The majority of the participants were nursing students ($n=102$; 27.3%). In addition, 186 participants were living with their families (49.9%), 184 (49.3%) were in dormitories, and 3 (0.8%) had rented a house. The majority of participants 250 (67.04%) were in 1st and 2nd years of study. In terms of ethnicity, 273 (73.2%) were Kurd and 98.9% had Iranian nationality. In terms of economic condition, 29.8% had a good economic condition, 9.7% had a moderate economic condition, and 5.6% had an outstanding economic condition (Table 1).

Totally, 248 (66.4%) participants had mild anxiety, 113 (30.3%) moderate anxiety, and 12 (3.3%) severe anxiety. The mean score of anxiety caused by COVID-19 in the participants was equal to 9.7 ± 4.74 .

The results indicated that the mean score of anxiety in female students and students over 30 year was higher than that in boys and those less than 30 years. In addition, non-Iranian students were higher among 3rd and 4th year students. Therefore, gender ($P=0.001$), age ($P=0.001$), year of study ($P=0.03$), and nationality ($P=0.001$) were significantly related to the anxiety score. Moreover, there was a significant relationship between age and educational attitude ($P=0.04$). There was no significant relationship between demographical variables and educational motivation in students (Table 2).

The results indicated that the highest mean score of anxiety caused by COVID-19 was in students of the operation room and the lowest

Table 1: Frequency distribution of demographical variables

Variable		N (%)
Age (year)	<20	121 (32.4%)
	20-25	250 (60.9%)
	26-30	13 (3.5%)
	30<	12 (3.3%)
Gender	F	220 (59%)
	M	153 (41%)
Year in the program	1 st and 2 nd	250 (67.04%)
	3 rd and 4 th	118 (31.60%)
	5 th and higher	5 (1.34%)
Marital status	Unmarried	345 (92.5%)
	Married	28 (7.5%)
Domicile	Student domicile	186 (49.9%)
	Parents' house	184 (49.3%)
	Rented house	3 (0.8%)
Financial condition	Low	36 (9.7%)
	Moderate	205 (55%)
	Good	111 (29.8%)
	Outstanding	21 (5.6%)
Ethnicity	Kurd	273 (73.2%)
	Not Kurd	100 (26.8%)
Nationality	Iranian	369 (98.8%)
	Not Iranian	3 (1.1%)

Table 2: The mean score of anxiety caused by COVID-19 and educational motivation and attitude of the students based on demographical variables

Variable		Anxiety		Attitude		Motivation	
		Mean±SD	P-value	Mean±SD	P-value	Mean±SD	P-value
Age	<20	4.43±7.19	0.001	59.48±7.26	0.04	66.7±5.04	0.76
	20-25	8.67±9.82		56.47±9.82		65.84±8.57	
	25-29	12.2±7.75		59.54±7.90		68.88±7.86	
	>30	14.33±7.69		63.01±8.15		68.87±5.31	
Gender	F	10.55±7.84	0.01	57.82±9.41	0.08	67.23±6.75	0.23
	M	8.48±7.51		59.44±7.97		66.33±7.58	
Year in the program	1 st – 2 nd	9.18±7.72	0.03	59.8±7.90	0.50	66.11±7.52	0.39
	3 rd – 4 th	10.75±7.79		55.81±10.09		67.89±6.55	
	>5	9.61±1.15		59.66±6.35		64.66±3.78	
Domicile	Parents' house	9.63±8.13	0.98	58.62±8.70	0.74	65.99±7.25	0.16
	Dormitory	9.77±7.46		58.29±8.99		67.38±7.27	
	Rented house	9.66±3.78		62.0±14.79		68.66±0.58	
Economic condition	Outstanding	9.14±7.54	0.31	60.14±11.18	0.07	65.8±4.85	0.39
	Good	9.63±6.39		59.91±8.38		67.55±6.22	
	Moderate	10.17±8.71		57.97±8.61		66.2±8.27	
	Poor	7.58±5.64		56.05±9.83		67.41±4.58	
Ethnicity	Kurd	9.99±7.62	0.29	58.96±8.71	0.41	68.6±7.05	0.21
	Not Kurd	9.83±7.60		58.56±7.55		66.17±9.37	
Nationality	Iranian	9.66±7.80	0.01	58.42±8.84	0.17	66.68±7.28	0.16
	Ot Iranian	13.25±1.50		64.5±11.10		68.5±3.78	

anxiety was in students of laboratory sciences. Therefore, based on analysis of variance, the mean score of anxiety caused by COVID-19 was significantly different between students in different fields of study ($P=0.001$) (Table 3). Analysis of variance indicated that despite the fact that educational motivation in medicine and anesthesia students was higher than that in other

students, there was no significant relationship between field of study and educational motivation ($P=0.074$) (Table 3).

Based on Pearson correlation coefficient, the relationship between the anxiety caused by COVID-19 and educational motivation was significantly inverse ($P=0.001$). In addition, according to the Pearson Correlation test,

Table 3: The mean score of anxiety caused by COVID-19 and educational motivation and attitude of the students at Ilam University of Medical Sciences in 2020

Field of study	N (%)	Anxiety		Attitude		Motivation	
		Mean±SD	P-value	Mean±SD	P-value	Mean±SD	P-value
Medicine	14(3.75%)	12.14±4.7	0.001	34.85±4.25	0.0001	71.64±5.49	0.074
Nursing	102(27.3)	8.77±8.36		36.21±5.22		67.34±5.83	
Dentistry	55(14.74%)	12.82±9.35		34.25±4.1		68.34±6.35	
Midwifery	47(12.6%)	12.82±9.35		32.76±6.59		66.48±6.35	
Medical emergency	56(15.01%)	8.82±6.89		36.94±3.35		66.28±6.29	
Operation room	13(3.48%)	13.07±10.57		31.84±4.79		66.07±3.9	
Anesthesia	8(2.14%)	12.62±10.68		37.25±1.9		70.25±7.51	
Laboratory sciences	36(9.65%)	8.47±4.7		35.69±2.56		67.63±4.91	
Hygiene	42(11.26%)	10.11±6.39		33.11±5.31		65.38±6.25	
Total	373(100%)	9.7±7.44		32.89±8.51		66.72±6.01	

Table 4: Correlation coefficient of anxiety caused by COVID-19 and educational motivation and attitude of students at Ilam University of Medical Sciences

Variable		Anxiety	Education motivation	Educational attitude
Anxiety	Pearson	1	-0.11	-0.253
	P-value		0.03	0.001

the relationship between the anxiety caused by COVID-19 and educational attitude was significantly inverse ($P=0.03$) (Table 4).

Discussion

The correlation between the anxiety caused by COVID-19 and educational motivation and attitude of students at Ilam University of Medical Sciences was examined. The results showed that the majority of students had mild to moderate anxiety caused by COVID-19 and only 3% had severe anxiety. Asadi, et al. (2020) reported a moderate level of anxiety in nurses working at hospitals with COVID-19 patients (21). Huang, et al. (2020) also reported a severe anxiety rate equal to 2.7% (22), which is consistent with the present study. On the other hand, Ansari, et al. (2020) reported that the prevalence of severe anxiety caused by COVID-19 was 27.6% (23). This figure in Liu Y, et al's (2021) study was 13.3% (24) and it was 14% in Cheng, et al's (2020) study (25). The reason for the different findings can be attributed to different study populations and time of study. Part of the sampling process in the present study was during nationwide vaccination in Iran and the notable decrease in severe anxiety could be due to the vaccination. Other studies mentioned were mostly conducted before the initiation of vaccination.

The results indicated that the mean score of anxiety in female students and students over 30 was higher than male students and students under 30. In addition, the mean score of anxiety in students in the 3rd and 4th years of study with clinical courses at health centers and COVID-19 wards was higher. In addition,

non-Iranian students had a higher mean score of anxiety. Other studies have also reported that the prevalence of anxiety caused by COVID-19 was higher in female students (26, 27). In addition, ethnicity and nationality were other factors in the severity of anxiety caused by COVID-19 (28). The severity of anxiety and depression in senior students was higher than that in the freshmen (29). These findings are consistent with the present study. On the other hand, inconsistent with the present study, the severity of anxiety was higher in freshmen and sophomores and in students under 25 (30-32). The reason for the inconsistent results can be different fields of study and exposure of students to stressors.

Among the demographic factors, educational attitude was only significantly related to age, while the mean score of educational motivation in students in the age range 20-25 years was lower than that in other age groups. The results of other studies indicated a significant relationship between age and educational attitude so that younger students had more concerns about the future of their studies and career (33).

The results indicated that while educational attitude and motivation in students in different medical fields were at an acceptable level, educational attitude and motivation were negatively and inversely related to the anxiety caused by COVID-19. In the case of operation room students, the anxiety caused by COVID-19 was higher than that in other fields. Consistent with other studies, results of the present study indicated that facing the stressors caused by COVID-19 pandemic increased anxiety, stress, and social seclusion in students. This can result in

an attenuation of educational motivation and other changes in educational performance in students (33, 34). Aristovnik, et al. (2020) reviewed experiences of students at 62 universities and found that along with increasing anxiety, burnout, and fatigue in students, COVID-19 increased concerns in students about the future of their career (31). Consilz, Tan showed that COVID-19 pandemic degraded learning motivation and performance in students (33). Therefore, COVID-19 pandemic has a negative impact on mental health and lifestyle behaviors of students (8). Studies have shown that having a positive attitude about future career increased educational motivation in students, which led to professional growth and career success in the future (34, 35). However, being exposed to hazardous situations leads to a higher stress and anxiety in students that creates more concern about future career and educational dissatisfaction. Therefore, if the field of study is not satisfying, continuing the program or the career in the future will be considered a burden (29, 36).

Limitations

Online methods that are not very reliable were used to collect information; the sampling was done during the peak of the coronavirus and access to students was only possible online.

Conclusion

Results of the present study indicated that the anxiety caused by COVID-19 had a negative and inverse relationship with educational motivation and attitude in students of different medical fields of study. Since one of the main problems of education during COVID-19 pandemic is to keep learning motivation high in students, increasing social supports and awareness in students about stress-causing condition like COVID-19 pandemic can have a notable role in attenuating anxiety and improving educational motivation and attitude in students.

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Authors' Contribution

S.M and R.Ch: Contributed to the conception, drafting, language editing, and editing of the manuscript; Z.K: Contributed to the statistical analyses and interpretation of data; B.S and R.Ch: Contributed to the conception and data gathering; S.K. and S.M: Contributed to the editing of the manuscript. All authors contributed to the

discussion, read, and approved the manuscript and agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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