

PSYCHOLOGICAL EFFECTS OF COVID-19 IN MEDICAL STUDENTS

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SUMMARY

Background: COVID-19 spread rapidly around the world, causing an acute infectious pneumonia pandemic. COVID-19 first seen in our country since 11 March 2020 in Turkey have also taken an epidemic form. Many social restrictions have been imposed to slow the spread, such as quarantine practices, curfews, restrictions on travel between countries / cities, restrictions on collective activities and social distance practices. In our country, formal education was suspended by the Higher Education Council and it was recommended that all processes including assessment and evaluation be carried out online. In this study, it was aimed to evaluate the psychological effects of Süleyman Demirel University Faculty of Medicine students due to the COVID-19 outbreak.

Method: 607 students gave opinions for the study (n=607). Generalized Anxiety Disorder-7 (GAD-7) Test was preferred in the study because it was preferred in international studies.

Results: Students' mean GAD-7 score was calculated as 10.24 ± 3.95 . 3 (0.5%) of the students were mild, 339 (55.8) were moderate, 168 (27.7%) were high and 97 (16%) were in serious anxiety. The average of anxiety of preclinical students (10.50 ± 4.06) was calculated to be higher than the clinical period students (9.80 ± 3.72) and a statistically significant difference was found between the two groups ($p=0.028$). 61 of the participants (10%) had COVID-19 positivity in themselves or in their relatives. The average of the students who had COVID-19 positivity in themselves or their close environment (11.37 ± 4.34) was higher than the students who did not (10.12 ± 3.89), and there was a statistically significant difference between the two groups ($p=0.034$). In our cross-sectional descriptive study, students' GAD-7 mean score was 10.24 ± 3.95 , which shows that students of Süleyman Demirel University Faculty of Medicine also had high prevalent anxiety disorders during the COVID-19 epidemic, in line with the current literature. As a result of this study in which we evaluated the psychological conditions of our students during the pandemic period.

Conclusion: Considering that the long-term effects of anxiety disorders will continue, we believe that it will be appropriate to plan activities for post-epidemic anxiety rehabilitation of our students in the evaluation of our post-epidemic education program.

Key words: COVID-19 pandemic - medical education - anxiety

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INTRODUCTION

The COVID-19 pandemic emerged in Wuhan province of the People's Republic of China in early 2020 and has been confirmed to be transmitted from person to person (Li et al. 2020). Afterwards, the virus has spread rapidly around the world, causing an acute infectious pneumonia epidemic (Ankaralı et al. 2020, Li et al. 2020, Lu et al. 2020, Wu & McGoogan 2020). It has turned into an epidemic also in our country since March 11, 2020, when first case of COVID-19 was identified in Turkey. The effects of the new type of coronavirus, which can individually start with symptoms of fever, weakness/fatigue, shortness of breath and muscle pain and lead to death, on many organs/systems ranging from respiratory tracts to neurological effects, and from circulatory system to fertility, and the uncertainty of the vaccine/treatment process have increased the anxiety in the society (Huang & Zhao 2020).

The COVID-19 pandemic has been spreading rapidly in the community due to the rapid spread through the respiratory tract, the relatively long incubation period and asymptomatic carriers. In order to slow down this contagion, many social restrictions such as

quarantine practices, curfews, restrictions on travel between countries/cities, restrictions of collective activities and social distance practices have been imposed.

These social restrictions, which are necessary for the protection of the public health, have also caused psychological effects in many parts of the society, including our students (Chen et al. 2020, Joob & Wiwanitkit 2020, Roy et al. 2020, Shanafelt et al. 2020, Yuan et al. 2020).

Due to this pandemic, formal education has been suspended in many countries and many recommendations have been developed (Ahmed et al. 2020). Also in our country, formal education has been suspended by the Council of Higher Education, and it was recommended that all processes, including assessment and evaluation, be carried out online. This process has been continued successfully in many higher education institutions.

During the COVID-19 period, the disruptions in education have taken its place among the important issues discussed all over the world, and in order to maintain education many methods have been discussed within the context of distance education. In distance education approaches, intensive education and highly controlled assessment/evaluation approaches were pre-

ferred, while the psychological profiles of the students were assumed to be as in the formal education period. However, student feedback, empirically, indicated a state of "anxiety".

Common anxiety disorder is a state of constant daily anxiety for at least 6 months, and the transformation of this state to reach a level that prevents daily life. Its incidence in the community is 5-6%. Although it is more common in the elderly and females, its frequency increases in conditions similar to the current period we have been experiencing. The Generalized Anxiety Disorder-7 (GAD-7) Test is one of the commonly used tools for monitoring anxiety disorders (Spitzer et al. 2006). GAD-7 can be applied to diagnose and evaluate the severity of anxiety disorders, as well as social phobia, post-traumatic stress disorders and panic disorders.

Empirical information about the state of anxiety in students led us to this question; "Could our medical students have developed anxiety disorder due to the COVID-19 outbreak?" We hope that the findings obtained from these studies provide data in terms of their psychological health for education interventions to be planned for Faculty of Medicine students in Suleyman Demirel University.

In this study, it was aimed to evaluate the psychological responses of Suleyman Demirel University, Faculty of Medicine students due to the COVID-19 outbreak.

METHOD

Suleyman Demirel University, Faculty of Medicine students were determined as the target population of the study (N=1645). No sample selection was made for the study, and the scale form was delivered to all students online. 607 students provided responses for the study (n: 607). Generalized Anxiety Disorder-7 (GAD-7) Test was preferred in the study due its preference in international studies (Cao et al. 2020). GAD-7, which was developed by Spitzer et al. based on DSM-IV-TR criteria, is a brief and self-reported test that evaluates generalized anxiety disorder (Spitzer et al. 2006). It is a 7-item four-point Likert (0=Never, 1=Many days, 2=More than half of the days, 3=Almost every day) type scale that evaluates the experiences asked in the scale items in the last 2 weeks. The total score of the GAD-7 ranges from 0 to 21, and a total score of 9 points or higher indicates an anxiety disorder. The Turkish validity and reliability study of the scale was carried out by Konkan et al., making it

possible for the scale to be introduced to our language (Konkan et al. 2013).

Data were analyzed with MS-Excel, EduG and SPSS Version 22.0. Descriptive statistics were analyzed to show demographic and other characteristics of the participants. A univariate analysis was used to investigate the significant relationship between sample characteristics and anxiety level during the COVID-19 pandemic. Statistically significant variables were scanned. Estimates concerning the strengths of the relationships are shown with a 95% confidence interval (CI). In the analyses $p < 0.05$ was considered statistically significant.

Approval was obtained from Suleyman Demirel University, Faculty of Medicine Clinical Research Ethics Committee for the study. All participants voluntarily gave consent to participate in the study after being informed about the purpose of the study. The procedures for this study comply with the provisions of the Declaration of Helsinki.

The reliability analysis of the scale for the population was made according to the generalizability theory (G-Theory), as it allows the evaluation of many error sources with a single analysis. When the study data are evaluated with the G-theory; the size of the relative value of the percentage (48.8%) of the variance component estimated for individuals indicates that the scores' power to represent the universe scores (discrimination) is high. The fact that the percentage of variance component estimated for the items is 5.2% and its being relatively lower than the individuals points out that the item difficulties are similar. The fact that the percentage of the variance component (46.1%) estimated for the individual-item is a large variance component indicates that systematic/nonsystematic errors are low (Table 1). In addition, according to the G-theory, the G-coefficient was calculated as 0.88.

In line with these data, it has been decided that the reliability of the scale is high for this population and that the application can be generalized to the study population.

RESULTS

607 students provided responses for the study. 386 (63.6%) students from the pre-clinical period and 221 (36.4%) students from the clinical period provided responses. 350 (57.7%) of the participants were female and 257 (42.3%) of the participants were male. 61 (10%) of the participants or individuals in their close circles tested positive for COVID-19.

Table 1. Variance Analysis

Source	SS	df	MS	Components				SE
				Random	Mixed	Corrected	%	
Individual	1353.34808	606	2.23325	0.28109	0.28109	0.28109	48.8	0.01832
Item	109.75524	6	18.29254	0.02970	0.02970	0.02970	5.2	0.01507
Individual-Item	965.67333	3636	0.26559	0.26559	0.26559	0.26559	46.1	0.00623
Total	2428.77665	4248					100	

Table 2. Descriptive analysis of the scale

Questions*	0 – Not at all sure	1 - Several days	2 - Over half the days	3 – Nearly every day	Mean±SD
Feeling nervous, anxious, or on edge	-	322 (53.0%)	146 (24.1%)	139 (22.9%)	1.70±0.81
Not being able to stop or control worrying	12 (2.0%)	467 (76.9%)	88 (14.5%)	40 (6.6%)	1.26±0.60
Worrying too much about different things	10 (1.6%)	360 (59.3%)	122 (20.1%)	115 (18.9%)	1.56±0.81
Trouble relaxing	11 (1.8%)	400 (65.9%)	108 (17.8%)	88 (14.5%)	1.45±0.75
Being so restless that it's hard to sit still	10 (1.6%)	477 (78.6%)	83 (13.7%)	37 (6.1%)	1.24±0.58
Becoming easily annoyed or irritable	7 (1.2%)	347 (57.2%)	127 (20.9%)	126 (20.8%)	1.61±0.82
Feeling afraid as if something awful might happen	10 (1.6%)	410 (67.5%)	106 (17.5%)	126 (20.8%)	1.43±0.73

*Over the last 2 weeks, how often have you been bothered by the following problems?

Table 3. Comparison of groups

Groups	Mean±SD	P value
Students who tested positive for COVID-19 or had positive cases in their close circles	11.37±4.34	P:0.034*
Students who are not tested positive for COVID-19 or had no positive cases in their close circles	10.12±3.89	

*T-Test

When the answers given to the GAD-7 scale were evaluated, it was observed that the students answered “many days” the most, and “more than half of the days” the second most in all questions. When the score equivalents of the questions were evaluated, the question number 1, " Feeling nervous, anxious, or on edge ", and the question number 6 " Becoming easily annoyed or irritable " were evaluated with the highest score. Students' GAD-7 score average was calculated as 10.24±3.95 (Min: 1; Max 21). 3 (0.5%) of the students were in mild, 339 (55.8) of the students were in moderate, 168 (27.7%) of the students were in high, and 97 (16%) of the students were in serious anxiety. The anxiety average of preclinical students (10.50±4.06) was calculated to be higher than the clinical period students (9.80±3.72), and a statistically significant difference was found between the two groups (p=0.028).

The average of the students who tested positive for COVID-19 or had positive cases in their close circles (11.7±4.34) was higher than the students who did not (10.12±3.89), and there was a statistically significant difference between the two groups (p=0.034) (Table 3).

When asked about the reasons for anxiety during the COVID-19 pandemic, 193 (32.5%) students stated that they were affected by academical reasons, 142 (23.4%) students were affected by daily life, 102 (16.8%) students were affected economically, 100 (16.4%) students stated reasons originating from social circle, 11 (1.8%) students were affected by their deteriorated health and 45 (7.4%) students stated that they were affected by all factors listed.

DISCUSSION

This study focused on determining the death anxiety in medical students caused by COVID-19 infection, their desire to provide care to the dying individuals and the influencing factors.

It was determined that the students got information about coronavirus from TV and scientific publications mostly. Also, they reported high levels of knowledge about coronavirus and an effective hand washing to prevent coronavirus transmission. This can be interpreted as the fact that continuous warnings about emphasizing importance of hand washing and informing the public about protection from COVID-19 infection on TV and other media organs by WHO (World Health Organization), ICD (International Classification Diseases) and official institutions of all countries were effective.

The studies have suggested that public health emergencies such as COVID-19 pandemic can have several psychological effects such as anxiety, fear and worry on students (Cao et al. 2020). The emergence of common infectious diseases such as COVID-19 is associated with psychosocial distress and mental illness. Increasing number of confirmed and suspicious cases, as well as the increase in the number of provinces and countries affected by the pandemic, lead anxiety to increase and public to be anxious (Bao et al. 2020, Salopek-Žiha et al. 2020). In the study, it was observed that medical students had high level of anxiety about transmission of coronavirus to themselves and to their family members. This was consistent with the data of the literature and society.

Another significant finding of the study is that death anxiety of the medical students was quite high. Moreover, as the level of anxiety of students about the transmission of coronavirus increased, their death anxiety levels also increased (p=0.037). It is suggested in the literature that experiencing the danger of death will expose the death anxiety and they will declare the fear of death more than those who do not experience such a danger (Özdelikara et al. 2015). In addition, the reasons for the high level of death anxiety in medical students can be regarded as association with COVID-19 and

death in their minds and witnessing deaths in the hospital settings. On the other hand, measures taken for COVID-19 infection on mass media, curfew, giving mortality rates continuously have led people to experience fear and have reminded health professionals of death. The obscurity in the treatment of individuals infected with COVID-19, constant contact with this issue and witnessing every stage in the course of the disease support the beliefs of the people and can constantly cause a desire to take precautions regarding their health, and COVID-19 is matched with death (Neto et al. 2020, Rajkumar 2020). This result is compatible with the literature. In addition, it is considered that when medical students start their professional life, they will encounter with pandemic infectious diseases like COVID-19, and failure to know how to cope with these situations is likely to cause anxiety.

In this study, it was observed that their death anxiety decreased as the level of students' attention to events other than coronavirus, their level of comforting themselves and their belief mentioning that they would heal if they catch coronavirus increased ($p < 0.05$).

As in this study, students can suppress their feelings and they try to continue to live by disregarding their feelings in the sense of coping with the negative emotions they felt. Education and practice provided in school of medicine can often be insufficient in reducing the fear of end-of-life care (Paul et al. 2019).

In studies, the trainings related to death, which is a complex situation with its physical, psychological, social, spiritual and cultural dimension, have been useful in controlling the students' negative attitudes towards death, changing them, increasing the awareness and getting knowledge, psychosocial skills and cultural sensitivity in creating positive attitudes (Lancaster et al. 2017, Alconero-Camarero et al. 2018, Testoni et al. 2018). In the study conducted by Wong & Lee (2000) on medical students, they stated that medical students were not supported adequately to cope with their experiences about death and approach it during their education before graduation, therefore; death education programs have a crucial role in reducing death anxiety caused by clinical experiences related to the care of dying patient and feeling of personal incompetence. As a member of professional occupation, physicians should provide qualified care to patients infected with coronavirus. In doing so, primarily they must know their own attitude towards death and evaluate how negative attitudes affect the care they provide. It is considered that death education will be effective for medical students to recognize their own death anxiety, realize the causes of this anxiety and develop positive attitudes by changing their negative attitudes towards death. Through this training, the nurse developing positive attitudes towards death with reduced anxiety will be able to provide qualified end-of-life care that dying patient and its family deserved. Accordingly, it is

considered that the results of this study are significant in terms of addressing death education in a wider and concrete way in medical education programs.

The limitation of the study is that it was conducted in single center. For this reason, it may not be generalizable to all medical students.

CONCLUSION

In the light of results of the study, it was found that most of the medical students obtained information about COVID-19 pandemic from TV and scientific publications other than continuing online medical education. The medical students' death anxiety was quite high, and they could not cope with such anxiety sufficiently. Moreover, it was observed that students' death anxiety was affected by their level of anxiety about the transmission of coronavirus, their level of attention to events other than coronavirus, their level of comforting themselves, and their belief that they would recover if they caught a coronavirus.

In the line with these results, it is considered that it would be an effective method to provide the training to medical students, who will become healthcare professionals, in order to change their negative attitudes and awareness towards COVID-19 related death anxiety and to improve their coping skills for death anxiety. Therefore, it may be suggested to provide COVID-19 related trainings in courses or scientific activities such as independent seminars and conferences, to encourage students to talk about their feelings and thoughts, to provide counselling services and to make this issue objectified with case discussions. Knowing the anxiety of death and related factors experienced by medical students during an uncertain pandemic period such as covid 19 can help to take precautions to reduce their anxiety burden and to support the educational literature. In this respect, the study contributes to the training of professional members who will contribute to the medical profession and society.

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Contribution of individual authors:

Giray Kolcu: conducted the literature review for the background of the study, analyzed and interpreted statistical data and wrote the majority of the article.

İnci Başer Kolcu: conducted the literature search, data were collected for the study, statistical data analyzed, and contributed to the writing of the article.

All authors have read and approved the last article.

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