

# THE PSYCHOLOGICAL EFFECTS OF COVID 19 ON MEDICAL AND NON-MEDICAL UNIVERSITY STUDENTS

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## SUMMARY

**Background:** The COVID 19 pandemic has had significant psychological effects on university students as well as in all segments of society. The aim of this study is to examine the relationship between education fields (medical-non medical), education styles (online-face to face), sociodemographic characteristics of university students and their levels of depression, anxiety, stress, fear of COVID-19.

**Subjects and methods:** In the cross-sectional designed research, 1213 university students studying in Turkey was reached online. A sociodemographic form, the Depression Anxiety Stress Scale (DASS 21) and the Fear of COVID-19 Scale (FCV-19S) was applied to the participants.

**Results:** Of all participants 887(73%) were women. 647(53%) students were studying in the medical field. The scores of FCV-19S and all subscales of DASS 21 were significantly higher in women. In the comparison between the field and style of education, no difference was found. DASS 21 scores were higher in the participants whose relatives had COVID-19 or who had a mental disorder in the past or medical disease.

**Conclusions:** In this study, it was observed that while there was no significant difference in the scores of DASS 21 among university students in terms of the field and style of education, variables such as gender, not having COVID-19 so far, having lost a relative due to COVID-19 could cause significant differences. Identifying sensitive groups will create early intervention opportunities.

**Key words:** anxiety – depression - fear of COVID-19 – stress - university students

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## INTRODUCTION

The COVID-19 pandemic that emerged in Wuhan in December 2019 affected the whole world in a short period of time. Due to the high risk of spread and the deaths it caused, governments began to take various measures quickly, and communities faced new situations such as travel restrictions, social isolation, the transition from formal education to online education, and curfews in the face of this massive public health crisis.

In addition to the effects of the pandemic on physical health, it also had some effects on people's mental health (Fiorillo and Gorwood 2020; Sinanović, Muftić, and Sinanović 2020). In various studies conducted during the pandemic period, data show that mental health problems such as anxiety, depression (Nguyen et al. 2020; Šljivo et al. 2020), post-traumatic stress disorder (Liu et al. 2020), substance use (Czeisler et al. 2020), sleep disorders (Fu et al. 2020) are increasing. With studies conducted in healthcare professionals (Elbay et al. 2020), various patient groups (Koppert, Jacobs, and Geenen 2020), and general population samples (Salari et al. 2020), the psychological effects of COVID-19 on university students, an active segment of the society, continue to be investigated (Cao et al. 2020). In a study with university students in the United States, it was stated that 71% of the participants had an

increase in stress and anxiety levels due to the COVID-19 pandemic, and only 5% of this group used mental health counseling services (Son et al. 2020). Also, studies are showing that depression, anxiety, and/or suicidal thoughts are at an alarming level among university students during the pandemic period (Wang et al. 2020). In another study in the United Arab Emirates, it was found that among the students in medical and nonmedical fields there were differences in anxiety levels and the effects of online education on anxiety levels (Saddik et al. 2020).

Our aim in this study is to examine the relationship between education fields (medical-nonmedical), education styles (online-face to face), sociodemographic characteristics of university students, and their levels of depression, anxiety, stress, fear of COVID-19.

## SUBJECTS AND METHODS

### Study design and participants

The research was planned as a descriptive and cross-sectional study. Snowball sampling was used in data collection; an online questionnaire including sociodemographic information form, Depression Anxiety Stress Scale 21 (DASS 21), and the Fear of COVID-19 Scale was applied to the university students over the age of 18 in Turkey. All participants provided informed

consent at the beginning of the questionnaire with a yes/no question confirming their willingness to participate in the study. The data of the participants who volunteered to participate in the study were collected between 20/10/2020-30/10/2020.

The Ethical approval for the study was granted by the ethical committee of Istanbul Medeniyet University and the Republic of Turkey Ministry of Health Scientific Research Platform.

## Materials

### *Sociodemographic information form*

In the sociodemographic information form, the participant's age, gender, education field (medical or nonmedical), education style (online or face-to-face) during the current education period, history of mental or medical illness, whether he/she had COVID-19, whether his/her relatives had COVID-19, and whether he/she lost a relative due to COVID-19 were questioned.

### *Depression Anxiety Stress Scale (DASS) 21*

This scale is a Likert-type self-report tool and consists of 21 items that assess depression, anxiety, and stress (Lovibond and Lovibond 1995). Each subscale includes seven statements. In the items, the participant is asked to score his/her experience in the last week from 0 (did not apply to me at all/ never) to 3 (applied to me very much/ always). The total subscale scores are calculated by the sum of the scores of the seven statements evaluating the subscales. Its Turkish validity and reliability studies were performed by Sarıçam et al. in 2018. Higher scores correlate with more severe emotional distress. Cut off points for subscale scores were accepted as follows: for depression subscale 0-4: normal, 5-6: mild, 7-10: moderate, 11-13: severe, and 14 and above: very severe; for anxiety subscale 0-3: normal, 4-5: mild, 6-7: moderate, 8-9: severe, and 10 and above: very severe; for stress subscale 0-7: normal, 8-9: mild, 10-12: moderate, 13-16: severe, and 17 and above: very severe (Saricam 2018).

### *The Fear of COVID-19 Scale*

The Fear of COVID-19 Scale is a Likert-type scale that consists of seven statements and the participants respond to statements to indicate the level of agreement. Answers include "strongly disagree", "disagree", "neutral", "agree" or "strongly agree". The total score is calculated by the sum of the scores of the answers given to seven statements (Ahorsu et al. 2020). Its Turkish validity and reliability studies were performed by Satıcı et al. in 2020 (Satıcı et al. 2020).

### Data analysis

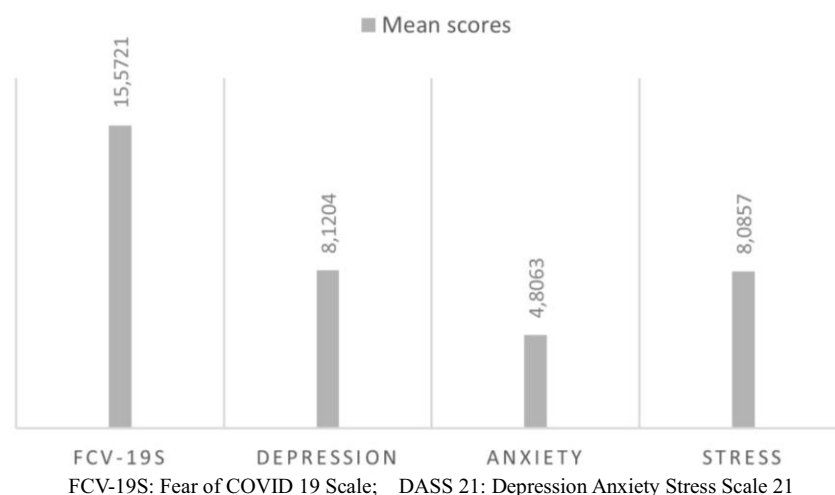
Data were evaluated using SPSS version 23. Student's t-test was applied in addition to descriptive statistics to reveal the relationship with psychiatric symptoms. Values of  $p < 0.05$  were considered significant.

## RESULTS

The average age of 1213 participants included in the study was  $20.74 \pm 3.32$  and 887 (73%) of them were women. Sociodemographic information, education field, education style and characteristics related to COVID-19 experience, and the comparison of the fear of COVID-19, depression, anxiety, and stress in these groups are presented in Table 1.

The mean fear of COVID-19 score was  $15.57 \pm 5.99$ , the mean DASS 21 score was  $8.12 \pm 5.89$  for depression,  $4.80 \pm 4.37$  for anxiety, and  $8.08 \pm 5.33$  for stress (Figure 1). Also, data about the levels of depression, anxiety, and stress are presented in figure 2.

In the comparison of the scale scores, it was observed that all scores were significantly higher in female participants. When the students' fear of COVID-19 and DASS 21 scale scores were compared in terms of education styles, there was no difference, while the scores of fear of COVID-19 were found to be significantly higher in students studying in nonmedical fields ( $p = 0.015$ ).

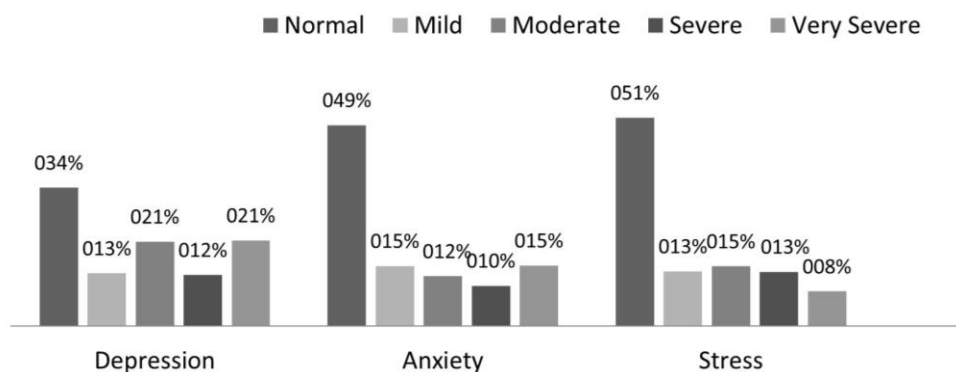


**Figure 1.** Mean score of the FCV-19S and DASS 21

**Table 1.** Comparison of the mean scores of the Fear of COVID 19 Scale and DASS 21

	N (%)	The Fear of COVID 19 Scale		DASS 21 – Depression		DASS 21 -Anxiety		DASS 21 – Stress	
		Mean±Sd	p	Mean±Sd	p	Mean±Sd	p	Mean±Sd	p
Gender			<0.001		0.002		<0.001		<0.001
Female	887 (73)	16.29±5.84		8.43±5.88		5.14±4.34		8.54±5.33	
Male	326 (27)	13.59±5.94		7.26±5.84		3.88±4.35		6.82±5.12	
Education style			0.267		0.180		0.466		0.475
Face-to-face	107 (9)	15.00±6.49		7.39±5.57		5.06±4.22		7.71±5.00	
Online	1008 (83)	15.68±5.92		8.20±5.99		4.74±4.37		8.81±5.38	
Education field			0.015		0.991		0.710		0.507
Health	647 (53)	15.17±5.64		8.12±5.74		4.85±4.27		8.18±5.19	
Non-health	566 (47)	16.02±6.34		8.11±6.07		4.75±4.49		7.97±5.48	
Whether he/she had COVID 19			0.110		0.259		0.002		0.162
Yes	59 (5)	14.35±7.08		8.96±6.40		6.52±5.27		9.03±5.76	
No	1154 (95)	15.63±5.92		8.07±5.87		4.71±4.31		8.03±5.30	
Whether his/her friends/relatives had COVID 19			0.092		0.015		<0.001		0.003
Yes	677 (56)	15.83±6.11		8.48±5.95		5.20±4.50		8.48±5.36	
No	536 (44)	15.24±5.82		7.65±5.80		4.29±4.16		7.57±5.25	
Whether he/she lost a friend/relative due to COVID 19			0.002		0.295		0.011		0.485
Yes	138 (11)	17.32±6.91		8.61±6.07		5.69±4.72		8.38±5.09	
No	1075 (89)	15.34±5.82		8.05±5.87		4.69±4.32		8.04±5.36	
History of mental illness before pandemic			0.932		<0.001		<0.001		<0.001
Yes	78 (6)	15.62±6.00		10.75±6.01		7.25±5.03		10.89±5.14	
No	1135 (94)	15.56±5.99		7.93±5.85		4.63±4.27		7.89±5.29	
History of medical illness			0.002		0.004		<0.001		0.027
Yes	149 (12)	16.99±6.60		9.40±6.06		6.20±5.18		8.99±5.55	
No	1064 (88)	15.37±5.87		7.93±5.85		4.61±4.21		7.95±5.29	

DASS 21: Depression Anxiety Stress Scale, Sd: standard deviation, Bold values show that p<0.05 statistical significance



**Figure 2.** DASS 21: Depression Anxiety Stress Scale 21

When the participants were evaluated in terms of their experiences with COVID-19, the fear of COVID-19, and DASS 21 depression and stress scores of those who had COVID-19 did not differ ( $p>0.05$ ), while the DASS 21 anxiety scores were found to be significantly higher ( $p=0.02$ ). Significant increase was found in all DASS 21 subscale scores of those whose friends/relatives had COVID-19 (depression:  $p=0.015$ , anxiety:  $p<0.001$ , stress:  $p=0.003$ ), but a similar difference was not observed in the fear of COVID-19. Those who answered "yes" to the question of whether you lost a friend/relative because of COVID-19 had significantly higher scores of fear of COVID-19 ( $p=0.002$ ), and DASS 21 anxiety ( $p=0.011$ ) compared to those who said "no", in addition the DASS 21 depression and stress scores were higher in those who answered "yes", but no significance was observed (Table 1).

Finally, the history of mental and medical illnesses of the participants was evaluated. The scores were found to be significantly higher in all subscales of DASS 21 in those who had a mental illness before the pandemic and in all subscales of DASS 21, and the fear of COVID-19 in those with medical illness (Table 1).

## DISCUSSION

The psychological effects of the pandemic on various segments of society around the world are revealed. In this study, we examined the relationship between the fear of COVID-19, depression, anxiety and stress levels of university students in our country during the period of COVID-19 with their educational fields, education styles and some sociodemographic factors.

When the whole sample was evaluated, the mean score for fear of COVID-19 was lower than the data of a study conducted in the United States (18.1) (Perz et al. 2020), but somewhat closer to the mean score of the university students in Spain (16.79) (Martínez-Lorca et al. 2020). In a study conducted in Turkish society, 786 participants were evaluated and the mean score of the fear of COVID-19 was 17.76 (Saricali et al. 2020). The fact that the Fear of COVID-19 Scale mean score in our sample of university students is below the average of the society can be explained by the fact that students can

access the informative resources more easily and partially prevent the fear response caused by lack of information and uncertainty.

When the articles published during the pandemic are examined, different depression, anxiety and stress scores are encountered in different societies. In a cross-cultural study comparing Pakistan and Germany, Pakistan's mean scores were higher in all subscales of DASS 21 compared to Germany (Pakistan/depression: 7.75 anxiety: 8.40 stress: 8.56 Germany/depression: 5.39 anxiety: 5.54 stress: 7.41) (Bibi et al. 2020), in another study conducted in Saudi Arabia these values are depression: 10 anxiety: 6 stress: 10.7 (Alkhamees et al. 2020). Bozdağ measured the depression, anxiety and stress scores of the Turkish population during the pandemic period as 4.78, 2.69 and 5.29, respectively, in a study conducted with 237 participants with the same tool (DASS 21) (Bozdağ 2020). In our study, the depression, anxiety and stress levels of university students were found to be higher than the society. Considering that it is the most active and social group in society, it seems reasonable that these scores are high due to the high transmission risks.

In the literature, it has been shown that women are more prone to depression, anxiety and stress (Lim et al. 2018). Similarly, in this study, higher scores were found in women compared to men. In addition, the scores for fear of COVID-19 were higher in line with the literature (Doshi et al. 2020) (Broche-Pérez et al. 2020) (Karaşar and Canlı 2020).

In many countries of the world, online methods have been used at all levels of education due to the changing conditions during the pandemic period. In a study conducted by Rajab et al., it was determined that more than half of university students preferred full face-to-face education when asked about their education style preferences (Rajab et al. 2020). By preventing university students from coming to campuses, transmission risks are tried to be reduced, but this may have a negative effect on their mental health (Al-Rabiaah et al. 2020). Our data showed that the education style (online/face-to-face) was not significantly associated with fear of COVID-19, depression, anxiety, and stress. Here, the disappearance of the difference between the two groups

and the increase in depression, anxiety and stress in both groups compared to the rest of the society may have been caused by the experiences of the students to face both the advantages and disadvantages of online and face-to-face education. It should also be taken into account that the high scores of the students compared to the society may have been caused by other elements of the pandemic rather than the education style.

The presence of people in their close environment or family members who have had COVID-19 infection or died due to this causes higher rates of depression and anxiety in individuals (Pouralizadeh et al. 2020) (Nie et al. 2020). In this study, all subscale scores of DASS 21 were significantly higher in those whose friend/relative had COVID-19, however it was determined that the fear of COVID-19 did not differ significantly between the two groups. This is again a finding that proves the pandemic is associated with the fear of COVID-19 in the whole sample, but the presence of the disease in the close environment increases depression, anxiety and stress. When the fear of COVID-19 and DASS 21 scores of those who lost their friends/relatives due to COVID-19 were examined, it was observed that while the fear of COVID-19 and DASS 21 anxiety scores were significantly higher, depression and stress subscale scores were high in both groups, but did not differ significantly. This data, which we found differently from the literature, may be due to the fact that the sample was university students and therefore participants responded to the loss of a friend/relative with fear and anxiety rather than depression.

It is known that people with mental disorders in the past are more likely to experience the illness again in the face of difficult life events. In our study, the fact that the participants had a past history of mental disorders caused a significant increase in DASS 21 scores. However, further studies are needed to explain that this difference is not observed in the scores of the Fear of COVID-19 Scale.

Various studies have demonstrated that COVID-19 infection is more severe in patients with a history of medical illness (Yang et al. 2020). This causes more fear in these people against COVID-19 infection. Although our sample included a younger age group, we also found significantly higher scores for fear of COVID-19, depression, anxiety, and stress in this group.

Our study was conducted via an online questionnaire due to the limited opportunity to reach university students face to face during the pandemic period. Online self-report forms are seen as a limitation for the mental state assessment. In addition, the voluntary basis of participation may have led to bias in the sample. Another limitation is that the study was designed as a cross-sectional rather than a follow-up study. With all of these, our study has reached important data to evaluate the psychological effects of the COVID-19 pandemic on university students.

## CONCLUSIONS

In this study, it was observed that while there was no significant difference in the scores of DASS 21 among university students in terms of the field and the style of education, variables such as gender, not having COVID-19 so far, having lost a friend/relative due to COVID-19 could cause significant differences. Identifying sensitive groups will create early intervention opportunities.

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**Conflict of interest:** None to declare.

### Contribution of individual authors:

Rümeysa Yeni Elbay, Hakan Yılmaz, Kürşad Çiftçi & Emrah Karadere: involved in design and conduct of the study, preparation and review of the study, data collection.

Rümeysa Yeni Elbay & Emrah Karadere: data analysis.

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