

FEAR OF COVID-19 AMONG MEDICAL STUDENTS AND ASSOCIATED FACTORS

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ABSTRACT

Aims: To determine the level of COVID-19 fear among Turkish medical students, and show the relationship the types of education (online, hybrid, face to face), age, gender, grade, and level of fear. **Methods:** The study was conducted with 536 medical students from 30 different universities in Turkey. The questionnaire comprised 1 open-ended and 6 multiple choice questions for assessment of the demographic structure, in addition to 7 Likert-type questions within the 'Fear of COVID-19 Scale'. **Results:** Participants comprised 352 (65.7%) female and 184 (34.3%) male students, with a mean age of 20.04 ± 2.59 years and they showed significantly different Fear of COVID-19 Scale scores with regard to gender. The past or current presence of COVID-19 was determined as another variable that created a significant difference in the Fear of COVID-19 Scale scores. However, no relation between the past or current presence of COVID-19 in a family member and the Fear of COVID-19 Scale scores were found. **Conclusion:** In this study, it is demonstrated that fear of COVID-19 is higher among females and non-infected medical students compared to males and infected ones, respectively. These results can be used in assessing the fear level of COVID-19 among medical students concerning their gender their gender and infection history. **Keywords:** COVID-19, medical students, fear, distance education, medical education

INTRODUCTION

Coronavirus disease 2019 (COVID-19) pandemic, with its relatively high mortality and rapid transmission, has caused a huge burden to governments, organizations, and individuals worldwide (1,2). According to the World Health Organization's weekly reports, there have been over 75 million cases and over 1.6 million deaths since the beginning of the pandemic, December 20th. The United States of America, Brazil, and Turkey were the countries reporting the highest numbers of new cases on December 14-20, 2020 according to the same reports (3).

Public health precautions such as quarantine, social distancing, and school closures are implemented all around the world to keep the spread of COVID-19 under control (4). As a part of these precautions, on March 10, 2020, the Turkish Ministry of Education announced that face-to-face education would be suspended for 3 weeks starting from March 16, 2020. Since then, distance education has been introduced throughout the country remaining the most common type of education today (5).

Since medical schools educations are mostly practical, it was later on authorized by the Council of Higher Education making the decision of calling their students to in person instructions. Following that, some schools remained in lock down, some were reopened, and some started a hybrid (a mix of online and in-person learning) education. Today, the types of medical education in Turkey still vary between online and face-to-face, depending on the school and grade level.

Studies show that anxiety, fear, worry, and depression are psychological effects on university students during public health emer-

gencies (6-8). Li et al. (7) reported that the mental health of university students have been affected during the pandemic. In another study conducted by Cao et al. (8), it has been shown that about 24.9% of college students have experienced anxiety because of the COVID-19 pandemic.

There are many scales associated with COVID-19 and the Fear of COVID-19 Scale (FCV-19S) developed by Ahorsu et al. (9) is one of them. FCV-19S is a 7-item, 5-point Likert scale. Ladikli et al. (10) reported that the FCV-19S can be used in the Turkish population as a reliable and valid measurement tool. In this study, we aimed to determine the level of COVID-19 fear among Turkish medical students and show its relationship with the type of education, age, gender, and grade.

MATERIAL AND METHODS

This cross-sectional study was approved by the Scientific Research Ethics Committee of Trakya University, School of Medicine (Protocol Code: TÛTF-BAEK 2020/440). In this study, a Turkish version of FCV-19S prepared by Ladikli et al. (10) and a questionnaire consisting of 7 questions were gathered in a single Google Form. The link to the form was shared via various social media channels and online chat groups of medical schools to reach medical students.

A paragraph to inform participants and get consent was added to the beginning of the form. Sociodemographic information, participants' current education type, and the current or past presence of severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) infection among the participants and their families were ques-

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tioned. FCV-19S was added as the last part of the form. FCV-19S is a scale consisting of seven questions. On this scale each question is scored between 1-5 points, and the total score is ranged between 7-35 points. The overall questionnaire is shown in Table 1. Answering all questions was mandatory to save the form. Logging in with a Google account was also mandatory to ensure every participant sent only one answer.

Data were analyzed with RStudio version 4.0.2. Numbers and percentages were stated for a clear declaration of answers. Moreover, calculations of means and standard deviations were used to express the results more concisely. The relationship between variables was analyzed using Welch's t-test and one-way ANOVA. A p value of <0.05 was evaluated as statistically significant.

Table 1: The questionnaire used in the study.

Questions	Answers
What is your age?	
What is your gender?	Female / Male
Which university do you study at?	
Which grade are you in?	1 / 2 / 3 / 4 / 5 / 6
Have you been infected by SARS-CoV-2?	Yes / No
Has someone in your family been infected with SARS-CoV-2?	Yes / No
What is your current education type?	Online / Hybrid / Face-to-face

RESULTS

This study was conducted among 536 medical students from all grade levels of medical school. The sample comprised of 352 (65.7%) female participants and 184 (34.3%) male participants, with a mean age of 20.04 ± 2.59 years. The number of participants who had been infected by SARS-CoV-2 was 53 (9.9%), whereas 483 (90.1%) of the participants had not been diagnosed with COVID-19. In addition to the infection status of the participants, the presence of a diagnosed COVID-19 patient among the family members of the participants was questioned. One hundred and sixty (29.9%) participants had at least one family member who had been diagnosed with COVID-19, whereas, 376 (70.1%) of the participants had no family member diagnosed with COVID-19. Distribution of demographic data are shown in Table 2.

The mean score for the questions on the scale was 17.1 (SD: 5.76, range: 7-35 points). Female participants had a mean score of 18.33 (SD: 5.59, range: 7-35 points), male participants had a mean score of 14.73 (SD: 5.33, range: 7-35 points), indicating a statistically significant difference between the scores of females and males ($p = 1.609.10-12$). The FCV-19S questions and the distribution of the Likert-type answers are shown in Table 3.

The sample group of students was from 30 different universities geographically distributed all over Turkey, where more than half of the participants were from universities located in Marmara region. Five-hundred ten (95.1%) students indicated that they had a completely online education at the time they participated in the study. 17 (3.2%) participants indicated that their current education type is hybrid (both online and face-to-face), and 9 (1.7%) participants declared that their current education is completely face-to-face. However, there was no significant impact of the education type on the level of COVID-19 fear ($p = 0.5905$). In addition, no statistically significant difference was observed between the FCV-19S scores of participants from different grade levels of medical school ($p = 0.11857$).

There was a statistically significant difference between the FCV-19S scores of previously infected and non-infected participants ($p = 0.026$). While non-infected participants had a mean score of 17.27 (SD: 5.80), infected participants had a mean score of 15.57 (SD: 5.09). When the participants were grouped according to the presence of an infected family member, there was no statistically significant difference between the two groups ($p = 0.9978$).

Table 2: Distribution of the demographic data.

Variables	Number of Students [n (%)]	P-value*
Age		
17-19	271 (50.6)	
20-22	217 (40.5)	
23-25	42 (7.9)	
25+	5 (1.0)	
Gender		
Female	352 (65.7)	1.609.10-12
Male	184 (34.3)	
Academic year		
1st year	259 (48.3)	0.11857
2nd year	75 (14.0)	
3rd year	102 (19.0)	
4th year	40 (7.5)	
5th year	52 (9.7)	
6th year	8 (1.5)	
Education type		
Online	510 (95.1)	0.590516
Hybrid	17 (3.2)	
Face-to-face	9 (1.7)	
Presence or history of SARS-CoV-2 infection in the participant		
Yes	53 (9.9)	0.02601
No	483 (90.1)	
Presence or history of SARS-CoV-2 infection in the participant's family		
Yes	160 (29.9)	0.9978
No	376 (70.1)	

*Statistically significant values are marked as bold.

DISCUSSION

Following the report of first COVID-19 case in Turkey on March 11, 2020, education was suspended for 3 weeks. Soon it was realized that to overcome the spread of virus, a nationwide lockdown could be necessary. Therefore, almost all universities in Turkey switched to online education, medical schools included. Contrary to expectations, COVID-19 cases continued increasing, though there were relatively fewer cases during the summer months (11). Consequently, the Council of Higher Education in Turkey suggested that universities continue their online education throughout the fall semester of 2020. Although, some universities preferred hybrid or face-to-face education most medical schools in Turkey provided educational services to their students online. The purpose of this study is to determine if there is a relation between

Table 3: Questions of the Fear of COVID-19 Scale and the prevalence of the answers.

<i>Fear of Corona Items</i>	<i>Strongly disagree [n (%)]</i>	<i>Disagree [n (%)]</i>	<i>Neutral [n (%)]</i>	<i>Agree [n (%)]</i>	<i>Strongly agree [n (%)]</i>	<i>Cumulative score [n (mean)]</i>
<i>I am most afraid of Corona.</i>	56 (10.4)	134 (25.0)	137 (25.6)	156 (29.1)	53 (9.9)	1624 (3.0)
<i>It makes me uncomfortable to think about Corona.</i>	68 (12.7)	124 (23.1)	78 (14.6)	190 (35.4)	76 (14.1)	1690 (3.1)
<i>My hands become clammy when I think about Corona.</i>	280 (52.2)	193 (36.0)	42 (7.8)	11 (2.1)	10 (1.9)	886 (1.7)
<i>I am afraid to lose my life because of Corona.</i>	122 (22.8)	140 (26.1)	102 (19.0)	124 (23.1)	48 (9.0)	1444 (2.7)
<i>When I read news and stories about Corona on social media, I become nervous or anxious.</i>	83 (15.5)	119 (22.2)	111 (20.7)	162 (30.2)	61 (11.4)	1607 (2.9)
<i>I cannot sleep because I worry I am going to get Corona.</i>	331 (61.8)	156 (29.1)	31 (5.9)	11 (2.1)	7 (1.3)	815 (1.5)
<i>My heart races or palpitates when I think about getting Corona.</i>	228 (42.5)	160 (29.9)	70 (13.1)	49 (9.1)	29 (5.4)	1099 (2.0)
Cumulative Score of the Scale						9165 (17.1)

the levels of COVID-19 fear and the type of education methods (online, hybrid, face-to-face).

In our study, there was a significant difference between female and male students regarding FCV-19S scores, indicating higher scores in females. This result is consistent with a study carried out by Nguyen et al. (1) among Vietnamese medical students, which determined that being male has a significant negative association with fear of COVID-19. On the other hand, Ahorsu et al. (9), who developed the FCV-19S scale, found that gender and fear of COVID-19 have no apparent relation in a study of the general population in Iran. However, in a corresponding study carried out by Haktanir et al. (12) among the general population in Turkey, FCV-19S scores were reported to be higher among women. Anxiety-related disorders are known to occur more frequently in females than males (13). Our findings are in line with this general trend in anxiety.

In the present study, there was a considerable difference found between FCV-19S scores in previously infected and non-infected participants where previously infected participants had a lower mean score. Knowing that age is a determining factor how a person will undergo the illness, level of seriousness approaching the pandemic could've been affected in students who already had COVID-19. Furthermore, when the participants are analyzed according to the presence of an infected family member, no statistically significant difference in FCV-19S scores between these two groups were found. We do not have a strong argument that could explain this latter behaviour of the participants. As far as we are aware of the current literature on COVID-19, these two last aspects have not been assessed in any other studies.

Our data of FCV-19S scores between different age groups of students shows that there is no remarkable relation between the levels of COVID-19 fear and participants' age. In the present study, the majority of the participating students were first, second, and third graders, which amounted to 81.3% of all participants. Therefore, the study may not differentiate the level of COVID-19 fear between low and higher graders because of the insufficient number of higher-grade students. However, in a study conducted by Martinez-Lorca et al. (15) about the fear of COVID-19, among the university student population in Spain including medical students, a significant relationship between age and FCV-19S scores has been reported. In the same study, it is stated that first-year students presented a higher level of FCV-19S score than the students of other grades. Another study by Nguyen et al. (1) concluded that older medical students (23-26 years of age) were affected less than younger medical students according to their FVC-19S scores.

Our study found no statistically significant relationship between the type of education and levels of COVID-19 fear. This may be due to the fact that almost all students (95.1%) that took part in our study were participating in fully online education. If our survey had included enough participants that took part in face-to-face education the results might reflect the difference. To the best of our knowledge, there is no study in the literature that assesses this relation.

Our study has several limitations. First, the present study did not have any means to measure if participants already had any psychological disorders (e.g. anxiety or depression). This may have affected the sensitivity and specificity of our survey results. Second, the present survey is carried out among the medical students to whom we may reach relatively easily by social media instruments. Therefore, the study necessarily excludes the students who could not be reached by such means. As an example, the number of sixth-graders who mostly have face-to-face education that participated in the survey is not enough to conclude their levels of COVID-19 fear. This prevents an adequate generalization of our findings to the whole body of medical students. The lack of relationship between age and FCV-19S scores may be due to this fact. More studies are required to address the aforementioned limitations.

In conclusion, our study demonstrated that the fear of COVID-19 is higher among females and non-infected medical students compared to males and infected students, respectively. These results can be used in assessing the level of COVID-19 fear among medical students regarding their gender and infection history. Further studies are needed including students of all ages and grades to overcome the limitations imposed by convenient sampling.

Ethics Committee Approval: This study was approved by the Scientific Research Ethics Committee of Trakya University School of Medicine (Protocol Code: TÜTF-BAEK 2020/440).

Informed Consent: Online informed consent was obtained from the participants of this study.

Conflict of Interest: The authors declared no conflict of interest.

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REFERENCES

1. Nguyen HT, Do BN, Pham KM et al. Fear of COVID-19 scale-associations of its scores with health literacy and health-related behaviors among medical students. *Int J Environ Res Public Health* 2020;17(11):4164.
2. TzurBitan D, Grossman-Giron A, Bloch Y et al. Fear of COVID-19 scale: Psychometric characteristics, reliability and validity in the Israeli population. *Psychiatry Res* 2020; 289:113100.
3. World Health Organization (WHO). COVID-19 weekly epidemiological update. WHO: Geneva, Switzerland, 2020. Available from: URL: <https://www.who.int/publications/m/item/weekly-epidemiological-update---22-december-2020>.
4. Du Z, Xu X, Wang L et al. Effects of proactive social distancing on COVID-19 outbreaks in 58 cities, China. *Emerg Infect Dis* 2020;26(9):2267-9.
5. Demirbilek Y, Pehlivanurk G, Ozguler ZO et al. COVID-19 out-break control, example of ministry of health of Turkey. *Turk J Med Sci* 2020;50:489-94.
6. Mei SL, Yu JX, He BW et al. Psychological investigation of university students in a university in Jilin province. *Med Soc* 2011;24(05):84-6.
7. Li WW, Yu H, Miller DJ et al. Novelty seeking and mental health in Chinese university students before, during, and after the COVID-19 pandemic lockdown: A longitudinal study. *Front Psychol* 2020;11:600739.
8. Cao W, Fang Z, Hou G et al. The psychological impact of the COVID-19 epidemic on college students in China. *Psychiatry Res* 2020;287:112934.
9. Ahorsu DK, Lin CY, Imani V et al. The fear of COVID-19 Scale: Development and initial validation. *Int J Ment Health Addict* 2020;1-9.
10. Ladikli N, Bahadir E, Yumusak FN et al. The reliability and validity of Turkish version of coronavirus anxiety scale. *Int J Soc Sci Res* 2020;3(2):71-80.
11. Turkish Ministry of Health. COVID-19 daily and weekly epidemiological updates: Ankara, Turkey, 2020. Available from: URL: <https://covid19.saglik.gov.tr/TR-68443/covid-19-durum-raporu.html>.
12. Haktanir A, Seki T, Dilmaç B. Adaptation and evaluation of Turkish version of the fear of COVID-19 scale. *Death Studies* 2020. Available from: URL: <https://doi.org/10.1080/07481187.2020.1773026>.
13. American Psychiatric Association. Diagnostic and statistical manual of mental disorders 5th ed. Washington DC: American Psychiatric Association; 2013.p.189
14. Centers for Disease Control and Prevention (CDC). Older adults and COVID-19: Atlanta, Georgia, USA, 2020. Available from: URL: <https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/older-adults.html>.
15. Martinez-Lorca M, Martinez-Lorca A, Criado-Alvarez JJ et al. The fear of COVID-19 scale: Validation in Spanish university students. *Psychiatry Res* 2020;293:113350.