

# COVID-19 Fear and Uncertainty Intolerance in Medical Students

## ABSTRACT

**Objective:** To investigate the COVID-19 fear and uncertainty intolerance in first-year medical students in the first year of the pandemic.

**Methods:** In the academic year 2020-2021, a cross-sectional study was carried out among students in the first year of medical school. They were asked to complete an online survey which included demographic information and two five-item (1 to 5) Likert scales. The scales were the Fear of COVID-19 Scale (FCS) and the Intolerance of Uncertainty Scale-12 (IUS-12).

**Results:** Of the 237 students included (participation rate 81.7%), the median age was 19.0 [IQR=1.0] years and 60.3% were female (n=143). The median FCS score was 17.0 [IQR=7.0] and the mean IUS-12 score was 37.4±8.8. A significant positive correlation was found between FCS and IUS-12 scores ( $r=0.316$ ,  $P<.001$ ). Elevated FCS scores were significantly associated with female gender, never smokers, and those reporting a need for psychological support ( $P<.05$ ). High IUS-12 scores were also significantly associated with the need for psychological support, but also with feeling lonely, home stress, and not watching online lectures ( $P<.05$ ).

**Conclusion:** High levels of COVID-19 fear and uncertainty intolerance were found in first-year medical students. Students' need for psychological support tended to be significantly higher at both higher scaled.

**Keywords:** COVID-19, Medical student, Psychological support

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## INTRODUCTION

The coronavirus disease (COVID-19) that began in Wuhan, China, spread worldwide and was declared a pandemic on March 11, 2020,<sup>1</sup> has struck the whole world, not only in terms of health policies, lifestyles, and social distances, but also in terms of how COVID-19 affects people's psychological condition.<sup>2-4</sup>

The emergence of COVID-19 and its pandemic nature exacerbated global fears and, in some situations, led to stigmatization.<sup>5,6</sup> Fear is one of the characteristics of an infectious disease as compared to other diseases. This is directly related to the rate and nature of transmission (rapid and invisible), and to disease incidence and mortality rates.<sup>7</sup> Moreover, uncertainty is a powerful source of psychological and physical stress. Higher perceived levels of uncertainty were linked to higher levels of depression, anxiety, and lower quality of life.<sup>8</sup>

The current pandemic has led to the fear and associated anxiety of being infected with COVID-19.<sup>9</sup> One study found that fear of COVID-19 mediated a relationship between uncertainty intolerance and mental health.<sup>10</sup> In this context, an important community that is psychologically at risk are the students of the medical faculties, who are the health care workers of the future.<sup>11</sup>

First-year medical students who have just entered university and taken their first step on the road to becoming physicians were found to mostly adversely affected, since their lectures are given online by distance education methods, by lack of access to textbooks, no lecture hall environment, and no face-to-face communication with teachers.<sup>12</sup> Therefore, it is crucial to study the psychological changes that may occur in first-year medical students as a result of the pandemic.

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As psychological effects such as anxiety, fear, and stress may be observed in first-year medical students during the COVID-19 pandemic, potentially affecting their academic and later professional success, interventions should aim to detect such mood changes early to prevent the problem from becoming deep and chronic.<sup>11,13</sup>

In this regard, family physicians, the first health professional contact for all individuals and medical students in healthcare facilities, have a vital role to play in identifying and addressing this problem.<sup>14</sup> Family physicians are expected to adopt a proactive approach to detect the problem with a biopsychosocial approach.<sup>15</sup> For this purpose, screening individuals' fear and intolerance states with practical, fast and easy survey methods will enable the detection of possible problems and thus prevent future troubles. This study aims to assess COVID-19 fear and uncertainty intolerance in first-year medical students.

## METHODS

### Study Design

This study was designed as a cross-sectional study.

### Ethical Approval

This study was carried out with the approval of the Ethics Committee of the Faculty of Medicine of the Atatürk University (approval number: 05.11.2020/-09-14). In addition, necessary permission for the scientific research was obtained from the Turkish Ministry of Health General Directorate of Health Services (application no. T19.08.33, dated 27.10.2020). Informed consent of the participants was obtained online.

### Study Period and Setting

The study was conducted at a university medical school during the 2020-2021 academic year between November 11, 2020 and November 16, 2020.

### Sample Size

The study population consisted of first-year medical students at a medical school during the 2020-2021 academic year, with a total of 290 medical students who were eligible to participate in the study. The GPower 3.1 program calculated the sample size as 236 students, at 0.05 type 1 error and 90% confidence level.

### Study Protocol

During the COVID-19 pandemic, it was deemed inappropriate to perform the research using face-to-face questionnaires in order to prevent the spread of infection,

and due to the faculty's decision at the time of the research to continue the education through distance learning. For this reason, students were asked to complete an online survey using Google Forms. The survey was made available to be completed online over a period of five days. For informed consent, the first section of the form provided information about the study, and the first question afterward inquired about the student's willingness for participation. If the answer was "no," the questionnaire was immediately closed and the person was not included in the study.

### Questionnaire

The questions in the first part of the survey examined the demographic characteristics of the participants and general effects related to COVID-19. Within the scope of the study, participants were asked to answer two different questionnaires to explore their fears of COVID-19 and their intolerance to uncertainty. The Fear of COVID-19 Scale (FCS) was used to determine fear of COVID-19 and the Intolerance of Uncertainty Scale-12 (IUS-12) was used to determine intolerance status.

The FCS was developed by Ahorsu et al. and then adapted to the Turkish language by Satıcı et al. who also confirmed the reliability and validity of the scale with a Cronbach's alpha value of 0.90.<sup>6,16</sup> The items are scored on a five-point Likert-type scale ranging from 1 to 5. Possible scores range from 7 to 35. In the absence of a cut-off value, a high score indicates a high level of fear of a COVID-19 pandemic.

The short form of the IUS-12 was developed by Carleton et al. and adapted into Turkish by Sariçam, and its reliability and validity were confirmed with a Cronbach alpha value of 0.85.<sup>17,18</sup> The five-point Likert-type scale consists of 12 items, scored between 1 and 5. Possible scores range between 12 and 60. Higher scores indicate greater intolerance of uncertainty.

### Statistical Analysis

The study data were analyzed by SPSS V23.0 (IBM, USA). Forms with missing data were excluded. Categorical data were expressed as frequencies and percentages, and continuous data were given as means and standard deviations if normally distributed, and medians and interquartile ranges (IQRs) if not. The Kolmogorov-Smirnov test was used for the assessment of the normal distribution of the data. Categorical data were analyzed using the Chi-square test. Student's t-test was used to analyze two independent continuous data, while one-way ANOVA test was used to analyze three or more groups

with normal distribution. For nonparametric analyses, Mann-Whitney U test was used to analyze two groups and Kruskal-Wallis test was used to analyze three or more groups. Spearman's correlation analysis was employed for correlations. The statistically significant parameters were further examined by multivariate regression analysis. For all analyses,  $P < .05$  was considered significant.

## RESULTS

A total of 237 first-year medical students (81.7% participation rate) who properly completed the survey were included in the study. The median age of the participants was 19.0 [IQR=1.0] years, and the majority were women ( $n=143$ , 60.3%). In terms of online lessons, only 24.1% ( $n=57$ ) of students reported fully attending these lectures, while 18.1% ( $n=43$ ) thought that studying at home was better. The sociodemographic and psychological characteristics and daily life behaviors of the participants are summarized in Table 1. One hundred thirty-three participants (56.1%) reported feeling lonely due to staying at home and social distancing during the COVID-19 pandemic, 135 (57%) stated that staying at home was more stressful, and 63 (26.6%) reported needing psychological support.

The participants' median FCS score was 17 [IQR=7] and the mean IUS-12 score was  $37.4 \pm 8.8$ . FCS and IUS-12 questionnaire scores had a statistically significant positive correlation ( $r=0.316$ ,  $P < .001$ ).

The FCS and IUS-12 scores of the participants according to sociodemographic characteristics and psychological states are summarized in Table 2. Accordingly, participants who were female, never smoked, and needed psychological support had higher FCS scores, while participants who felt lonely, found it stressful to stay at home, needed psychological support, and did not watch online classes had higher IUS-12 scores. The only situation in which the score was statistically high in both scales was the need for psychological support.

Multivariable linear regression analysis was performed to predict the intolerance of uncertainty variable using the variables of fear of COVID-19, need for psychological support, and feeling alone. As a result of the analysis, a significant regression model of the variance in the dependent variables was found to be explained by the independent variables (Table 3).

**Table 1.** Sociodemographic and psychological characteristics and daily life behaviors of the participants

|   | <b>N (%) *</b> |
|---|----------------|
| <b>Age (years) median IQR</b>                               | 19.0 [1.0]     |
| <b>Sex</b>  |                |
| Female  | 143 (60.3)     |
| Male  | 94 (39.7)      |
| <b>Chronic disease</b>                                      |                |
| No  | 229 (96.6)     |
| Yes   | 8 (3.4)        |
| <b>Smoking status</b>                                       |                |
| Never smoked  | 192 (81.0)     |
| Quit  | 21 (8.9)       |
| Current smoker  | 24 (10.1)      |
| <b>Psychological support</b>                                |                |
| Not required  | 174 (73.4)     |
| Required  | 63 (26.6)      |
| <b>Feeling alone</b>  |                |
| No  | 104 (43.9)     |
| Yes   | 133 (56.1)     |
| <b>Increased food intake</b>                                |                |
| No  | 68 (28.7)      |
| Sometimes   | 64 (27.0)      |
| Yes   | 105 (44.3)     |
| <b>Vacation plans for this year?</b>                        |                |
| No, I will not go until I am vaccinated                     | 23 (9.7)       |
| No, I will not go until the pandemic is over                | 109 (46.0)     |
| No, I in any case had no intention of going                 | 37 (15.6)      |
| Yes, I have been  | 68 (28.7)      |
| <b>Perception of remaining at home</b>                      |                |
| It is less stressful  | 22 (9.3)       |
| It is more stressful  | 135 (57.0)     |
| Not changed   | 80 (33.8)      |
| <b>Able to follow classes online</b>                        |                |
| Yes   | 57 (24.1)      |
| No  | 54 (22.8)      |
| I follow them later   | 32 (13.5)      |
| Not much  | 94 (39.7)      |
| <b>Contact with COVID-19</b>                                |                |
| Diagnosed   | 11 (4.6)       |
| I came into contact and went into quarantine                | 40 (16.9)      |
| Relatives were diagnosed                                    | 131 (55.3)     |
| I did not come into contact and no relatives were diagnosed | 55 (23.2)      |

\* Total percentage may be more than 100% due to rounding up of decimal digits.

**Table 2.** FCS and IUS-12 scores of the participants according to sociodemographic characteristics and psychological states

|   | <b>FCS SCORE</b><br>(MEDIAN [IQR]) | <b>P</b>                    | <b>IUS-12 SCORE (MEAN</b><br><b>± STD. DEVIATION)</b> | <b>P</b>                    |
|---|------------------------------------|-----------------------------|---|-----------------------------|
| Age (Year)  | 19.0 [1.0]                         | .053*                       | 19.0 ± 1.1  | .568*                       |
| <b>Sex</b>  |                                    | <b>&lt;.001<sup>†</sup></b> |   | <b>.871<sup>†</sup></b>     |
| Female  | 18.0 [6.0]                         |                             | 37.4 ± 8.3  |                             |
| Male  | 14.0 [7.0]                         |                             | 37.3 ± 9.6  |                             |
| <b>Chronic Disease</b>  |                                    | .116 <sup>†</sup>           |   | .513 <sup>†</sup>           |
| No  | 17.0 [7.0]                         |                             | 37.4 ± 8.9  |                             |
| Yes   | 13.0 [5.0]                         |                             | 35.9 ± 6.1  |                             |
| <b>Smoking</b>  |                                    | <b>.009<sup>†</sup></b>     |   | <b>.690<sup>†</sup></b>     |
| Never Smoked  | 17.0 [7.0]                         |                             | 37.1 ± 8.6  |                             |
| Quit  | 16.0 [7.0]                         |                             | 39.2 ± 9.3  |                             |
| Still Smoking   | 14.0 [6.0]                         |                             | 37.6 ± 10.6   |                             |
| <b>Psychological Support Requirement</b>  |                                    | <b>&lt;.001<sup>†</sup></b> |   | <b>&lt;.001<sup>†</sup></b> |
| No  | 16.0 [6.0]                         |                             | 35.9 ± 8.2  |                             |
| Yes   | 19.0 [8.0]                         |                             | 41.1 ± 9.3  |                             |
| <b>Feeling Alone</b>  |                                    | .252 <sup>†</sup>           |   | <b>.003<sup>†</sup></b>     |
| No  | 16.0 [8.0]                         |                             | 35.2 ± 9.0  |                             |
| Yes   | 17.0 [6.0]                         |                             | 39.1 ± 8.3  |                             |
| <b>Increased Eating</b>   |                                    | .739 <sup>‡</sup>           |   | .063 <sup>‡</sup>           |
| No  | 16.0 [8.0]                         |                             | 37.1 ± 8.7  |                             |
| Sometimes   | 17.0 [5.0]                         |                             | 35.6 ± 8.3  |                             |
| Yes   | 16.0 [6.0]                         |                             | 38.7 ± 9.1  |                             |
| <b>Vacation Plans for This Year</b>   |                                    | .556 <sup>‡</sup>           |   | .183 <sup>‡</sup>           |
| No, I will not go until a vaccine is found  | 19.0 [5.0]                         |                             | 34.6 ± 10.9   |                             |
| No, I will not go until the pandemic is over                                      | 17.0 [6.0]                         |                             | 38.0 ± 8.6  |                             |
| No, I in any case did not wish to go  | 15.0 [9.0]                         |                             | 34.6 ± 10.9   |                             |
| Yes, I have been  | 17.0 [8.0]                         |                             | 38.4 ± 8.3  |                             |
| <b>Relationships When Staying at Home</b>   |                                    | .437 <sup>†</sup>           |   | <b>.010<sup>†</sup></b>     |
| Less Stressful  | 17.0 [7.0]                         |                             | 34.1 ± 9.1  |                             |
| More Stressful  | 17.0 [7.0]                         |                             | 38.9 ± 8.9  |                             |
| Not Changed   | 16.0 [5.0]                         |                             | 35.7 ± 8.0  |                             |
| <b>Able to Watch Classes Online</b>   |                                    | .057 <sup>†</sup>           |   | <b>.022<sup>†</sup></b>     |
| Yes   | 18.0 [7.0]                         |                             | 35.8 ± 8.6  |                             |
| No  | 17.0 [6.0]                         |                             | 40.4 ± 9.7  |                             |
| I Watch Them Later  | 15.0 [6.0]                         |                             | 38.3 ± 8.4  |                             |
| Not Much  | 17.0 [6.0]                         |                             | 36.3 ± 8.2  |                             |
| <b>COVID-19 Contact</b>   |                                    | .671 <sup>‡</sup>           |   | .991 <sup>‡</sup>           |
| I have been diagnosed   | 16.0 [5.0]                         |                             | 37.7 ± 5.9  |                             |
| I have been in contact and I was<br>quarantined relatives have been diagnosed     | 16.5 [8.0]<br>17.0 [5.0]           |                             | 37.0 ± 10.0<br>37.3 ± 9.0                             |                             |
| I have had no contact with COVID, and no<br>relatives have been diagnosed with it | 16.0 [7.0]                         |                             | 37.8 ± 8.2  |                             |

(Note: Bold *P* values indicate Significance below .05)

FCS: Fear of COVID-19 scale, IUS-12: Intolerance of uncertainty scale-12, IQR: Interquartile range.

Data is presented as median [interquartile range] and mean ± standard deviation.

\* Spearman's correlation test

† Mann-Whitney U test

‡ Kruskal Wallis test.

**Table 3.** The multiple linear regression model of intolerance of uncertainty scale

| <b>Variables</b>                         | <b>Unstandardized Coefficients</b> |                  | <b>Standardized Coefficients</b> |          |             |
|--|------------------------------------|------------------|----------------------------------|----------|-------------|
|  | <b>B</b>                           | <b>Std.Error</b> | <b>Beta</b>                      | <b>t</b> | <b>Sig.</b> |
| <i>Feeling alone</i>                     | 1.65                               | 0.63             | 0.61                             | 2.60     | 0.010       |
| <i>Psychological support requirement</i> | 3.21                               | 1.28             | 0.65                             | 2.50     | 0.013       |
| <i>Fear of COVID-19</i>                  | 0.46                               | 0.18             | 0.26                             | 4.25     | 0.000       |

$R^2=0.162$ . adjusted  $R^2=0.151$ ,  $SE=8.12$ ,  $F=14.96$ ,  $P<.001$

Dependent variable = Intolerance of Uncertainty Scale

Independent variables = feeling alone, psychological support requirement, fear of COVID-19

## DISCUSSION

People are afraid of catching COVID-19. The situation is still unclear, and people are still losing money because of the virus. Increased fear of Corona Virus was found to correlate positively with intolerance of uncertainty. Consistent with our study, Bakioğlu and Ercan observed positive correlation between fear of COVID-19 and intolerance of uncertainty.<sup>20</sup>

Mean FCS scores were higher among female students compared to male students. Women tend to adapt better to environmental stress, but may be prone to develop disease.<sup>19</sup> More frequent illness may have contributed to fear of COVID-19 being at higher levels in women than in men. This finding is compatible with previous studies reporting higher fear levels in female students.<sup>20, 21</sup>

Women adapt better to stress, but may get sick more often. This may be why women are more afraid of COVID-19 than men. This finding is similar to previous studies that found women are more afraid than men. Some studies say women are more tolerant of uncertainty than men, while others say men are more tolerant. It is worth noting that both survey scores are positively correlated, and regression analysis revealed this association between them, such that fear of COVID-19 causes intolerance of uncertainty. In this study, the fear of COVID-19 disease and intolerance of uncertainty of first-year medical faculty students were examined by using the FCS and IUS-12 questionnaires. It is worth noting that both survey scores are positively correlated, and regression analysis revealed this association between them, such that fear of COVID-19 causes intolerance of uncertainty.

Some conditions capable of being caused by the disease may be regarded as negativities experienced by all, independently of sex. This may have led to no significant difference in levels of intolerance of uncertainty being observed between male and female students. Similar results have also been reported in previous studies.<sup>22,23</sup>

Education in Saudi Arabia also began being provided in the form of distance education as a precaution against the spread of COVID-19, and similar findings were observed to those of the present study.<sup>24</sup> Epidemics can lead to significant psychological difficulties, uncertainty, and fear of uncertainty, and this can result in undesirable effects.

High levels of fear and intolerance of uncertainty were determined among participants with family members who had been exposed to COVID-19. This may probably have derived from these students being anxious about their families' health, the infection being transmitted to other family members, an uncertainty about the course of the disease. Similar findings were obtained in a study of students in Saudi Arabia.<sup>24</sup>

People are afraid of catching the virus.<sup>25</sup> This is similar to other studies that found women are more afraid. Some studies have found different results. Parlapani says men are less uncertain than women.<sup>26</sup>

In conclusion, First-year medical faculty students in this study exhibited high levels of fear of COVID-19 and intolerance of uncertainty. The psychological problems of first-year medical students need to be investigated, and appropriate psychological counseling, support, and guidance needs to be provided.

*Limitations:* Our study has some limitations. Given that the survey was conducted as the pandemic began, results may change over time. In addition, pre- and post-pandemic comparisons were not possible due to the unknown scores of the participants before the pandemic. Thirdly, the study was conducted only among first-year medical students, and it is unknown whether COVID-19 fear and intolerance of uncertainty differs among medical students in other grades or other faculties. Furthermore, this was a single-center study, so the results of this study cannot be generalized.

**Ethics Committee Approval:** Ethics committee approval was obtained from Ethics Committee of the Faculty of Medicine of the Atatürk University (Date: 05.11.2020, Number: 09-14)

**Informed Consent:** Informed consent of the participants was obtained online.

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**Conflict of Interest:** The authors have no conflicts of interest to declare.

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