

# Determination of anxiety levels of turkish university students and affecting factors in COVID-19 pandemic: sample of a private university

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## ABSTRACT

**Introduction:** The Coronavirus disease 2019 (COVID-19) pandemic and its consequences have created anxiety in various segments of society. In particular, the transition to online education brought by this process has made the education process of university students difficult. Therefore, in the COVID-19 pandemic, it is important to examine the anxiety levels of university students and their relationship with somatic symptoms. **Objective:** To examine the level of generalised anxiety disorder and to reveal the relationship between somatic symptoms and the generalised anxiety disorder level of Turkish university students. **Methods:** Empirical research. Participants in the research constituted a total of 605 students studying at a private university in İstanbul. The Generalised Anxiety Disorder Scale (GAD-7) was used to collect data. Data were analysed using the chi-square test and Pearson correlation analysis. **Results:** It was found that, among the participants, 193 (31.90%) of the students had mild anxiety, 149 (24.63%) had moderate anxiety and 121 (20.00%) had severe anxiety. The study revealed that there is a significant positive relationship between the number of somatic symptoms and generalised anxiety disorder scores of university students. **Conclusion:** Most of the university students are affected by anxiety during the COVID-19 pandemic and this effect is correlated with the frequency of somatic symptoms. In this context, it would be beneficial for universities to plan for acute and long-term psychological services and to cooperate with the government to provide timely crisis-oriented psychological services.

**Keywords:** patient health questionnaire; student health; medically unexplained symptoms; COVID-19.

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## INTRODUCTION

COVID-19 is the third coronavirus infection in Asia in two decades, after severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS)<sup>1</sup>. For this epidemic, which has been declared as a pandemic by the World Health Organization (WHO), extensive physical measures have been taken in community and health institutions, but it has been relatively neglected to determine the mental and physical health

conditions of people<sup>2</sup>. The uncertainty and low predictability of the COVID-19 pandemic affect the mental and physical health, as well as well-being, of those who are not exposed to the disease<sup>3</sup>. In this situation, people may develop negative emotions (e.g. unwillingness, worry, anxiety, fear, etc.) and physical reactions (sleep disturbances and stomach problems) to protect themselves. If negative emotions are experienced for a long time, people's immune function may decrease and disrupt their normal physiological balance. Therefore, it is very important to understand the potential psychological and physical changes caused by COVID-19 in a timely manner.

The rapid spread of COVID-19 cases has caused anxiety among university students. Studies have shown that anxiety has negative effects on the learning and psychological health of students. Schools being closed for a long time, suggestions for the measures related to the epidemic, the immediate removal of university students living in the dormitories, the postponement of graduation ceremonies, the loss of their jobs, the delay in employment due to the postponement of their graduation, the mourning due to the loss of relatives, and the situation of foreign students increases their anxiety even more. In this context, universities should see the safety and well-being of students as the highest priority. They should try to understand their feelings. It is important to support students and monitor their mental health as the pandemic continues. Students need the attention, help and support of the community, family and social institutions. The government and universities should collaborate on current crisis-focused psychological services to address this problem<sup>4</sup>.

In the literature reviews, many studies have been conducted to measure the anxiety levels of university students before and during a pandemic<sup>1,3-9</sup> in various countries, including Turkey<sup>10,11</sup>. There was research conducted in Turkey before the COVID-19 pandemic using the GAD-7 scale. The study of Gunduz et al.<sup>12</sup>, which was conducted among 219 university students, was examined. They reported the average GAD-7 average scores of two groups of 143 individuals and 76 individuals in the sample as  $8.43 \pm 1.76$  and  $9.82 \pm 2.35$ , respectively<sup>12</sup>.

Various scales that determine the psychological state were used in these studies. In Turkey, there is no study on this subject. The results of this study can be used as a reference for planning preventive and supportive measures (proactive work of academicians and student clubs, providing counselling and psychotherapy) to reduce the anxiety of students and protect their physical health for future epidemics, such as COVID-19. Accordingly, this study aims to determine the generalised anxiety disorder level of students during the COVID-19 pandemic, their psychosomatic symptoms, in the sample of a private university.

## METHODS

### Model of the Research

This study was designed in the concept of a relational and descriptive survey model to examine the level of generalised anxiety

disorder and to reveal the relationship between somatic symptoms and generalised anxiety disorder level of Turkish university students in the sample of a private university.

### Sample of the Study

This study was carried out between the dates of 06/09/2020 and 06/15/2020, among students studying for their bachelor and master's degrees at a private university in Istanbul. This university was chosen because it has students coming from different cities in Turkey. According to the convenience sampling technique, the researcher collected data by interviewing the appropriate prospective subjects, which are easiest to reach to provide the sample of the time required for the study<sup>13</sup>. The universe of the research was composed of 5,364 students studying for their bachelor and master's degrees at a private university. It was indicated that, at  $\alpha=0.05$  confidence interval, it is necessary to carry out the study with a sample of at least 601 people in a population consisting of 5,000-10,000 people with  $p=0.8$  and  $q=0.2$  probabilities with 0.03 sampling error at  $\alpha=0.05$  confidence interval<sup>14</sup>. During the data collection process, the sample size reached 624 students, and due to outliers and missing values, 19 of the observations were excluded. The population of the research was composed of 605 students studying in the 2019-2020 academic year fall semester at a private university in Istanbul.

### Data Collection and Data Collection Tools

Data collection was held during the 2019-2020 academic year fall semester at a private university in Istanbul. The data of the study were collected using an online form because of the COVID-19 pandemic. The online survey form was created in Google Forms. The online survey form was sent to students using an official e-mail with the permission of the Dean of the Faculty. The online survey form was modified accordingly to enable only the active university students to reach the questions. Participants were informed that participation in the study was voluntary, with a statement placed in front of the online survey questions. In addition, an online consent form was placed in front of the survey questions, and individuals whose consent was obtained were allowed to participate in the research. There was no question in the survey form that would reveal the identity of the person. The students were informed that they had the right to withdraw their answers and to withdraw from the research. The answers to the questionnaire were transferred to the computer environment as a Microsoft Office Excel file by the senior researcher and saved in the computer environment as an IBM Statistical Package for the Social Sciences (SPSS) 24 analysis file after the necessary coding. The data collected during this study is for scientific purposes only and has been processed for presentation at national/international academic meetings and/or publications. In the survey form, besides the GAD-7 scale, there were questions pertaining to gender,

age, health insurance, major, behaviours during the COVID-19 pandemic and prevalence of somatic symptoms.

**GAD-7 scale:** It is a short self-report test that evaluates generalised anxiety disorder developed by Spitzer et al.<sup>15</sup>. The scale consists of a 7-item 4-point Likert scale (0= not at all sure, 1= several days, 2= over half the days, and 3= nearly every day), which evaluates the experiences asked in the scale items in the last 2 weeks. The total scores obtained from the scale are 5, 10, and 15 as cut-off points for mild, moderate, and severe anxiety, respectively. According to Spitzer et al.<sup>15</sup>, it is necessary to investigate and confirm the diagnosis of the scale by other methods in patients with a total score of 10 and above. The scale was adapted to Turkish by Konkan et al.<sup>16</sup>, and its validity and reliability were proved. In the Turkish version, the acceptable cut-off value was 8. The internal consistency coefficient for the scale is  $\alpha=0.85$  and the internal consistency coefficient obtained in this study was  $\alpha=0.91$ .

## Data Analysis

Ethical approval for the study was obtained from the İstanbul Yeni Yüzyıl University Faculty of Medicine Non-Interventional Clinical Research Ethics Committee with the approval number

2020/06-470 on 9 June 2020. The informed consent form was read and signed by all individuals participating in the research. IBM SPSS 24 was used to run the tests. The calculated skewness and kurtosis statistics related to the descriptive examination of its normality were found to be within the range of  $\pm 1$  for all variables and showed a normal distribution accordingly. At this point, it was decided to use parametric analysis techniques to analyse the data. The data were analysed using the chi-square test and Pearson correlation analysis.

## RESULTS

### Descriptive Statistics

According to the values, which can be seen in Table 1, 392 (64.79%) of the individuals in the sample were female, 213 (35.21%) were male and their ages varied between 18 and 29 (mean 21.69 years, standard deviation 2.11 years). A total of 460 (76.03%) of the individuals in the study mentioned that they held social security provided by a state institution, 40 (6.61%) of them mentioned that they held private insurance, 33 (5.45%) of them mentioned that they benefitted from the free health service

**Table 1:** Descriptive values of the sample and scores for anxiety

| Variables  | Total |       | GAD<10 |     | GAD≥10 |     | Statistical Analysis |          |        |
|--|-------|-------|--------|-----|--------|-----|----------------------|----------|--------|
|  | N=605 | n     | %      | n   | %      | n   | %                    | $\chi^2$ | p      |
| <b>Gender</b>  |       |       |        |     |        |     |                      |          |        |
| Female   | 392   | 64.79 |        | 205 | 52.30  | 187 | 47.70                |          |        |
| Male   | 213   | 35.21 |        | 130 | 61.03  | 83  | 38.97                | 4.263    | 0.039* |
| <b>Health insurance</b>  |       |       |        |     |        |     |                      |          |        |
| Social Security Institution  | 460   | 76.03 |        | 262 | 56.96  | 198 | 43.04                |          |        |
| Private Insurance  | 40    | 6.61  |        | 22  | 55.00  | 18  | 45.00                |          |        |
| Free State Health Service  | 33    | 5.45  |        | 22  | 66.67  | 11  | 33.33                | 8.811    | 0.032* |
| No Insurance   | 72    | 11.90 |        | 29  | 40.28  | 43  | 59.72                |          |        |
| <b>Province</b>  |       |       |        |     |        |     |                      |          |        |
| İstanbul   | 406   | 67.11 |        | 238 | 58.62  | 168 | 41.38                |          |        |
| Other Cities   | 199   | 32.89 |        | 97  | 48.74  | 102 | 51.25                | 5.272    | 0.022* |
| <b>Status of change in income during COVID-19 pandemic</b>                                       |       |       |        |     |        |     |                      |          |        |
| Decreased  | 361   | 59.67 |        | 193 | 53.46  | 168 | 46.54                |          |        |
| No Changed   | 244   | 40.33 |        | 142 | 58.20  | 102 | 41.80                | 1.320    | 0.251  |
| <b>Status of having a family member dismissed due to COVID-19 pandemic</b>                       |       |       |        |     |        |     |                      |          |        |
| Yes  | 103   | 17.02 |        | 46  | 44.66  | 57  | 55.34                |          |        |
| No   | 502   | 82.98 |        | 289 | 57.57  | 213 | 42.43                | 5.764    | 0.016* |
| <b>Status of having a family member with chronic disease being cared at home</b>                 |       |       |        |     |        |     |                      |          |        |
| Yes  | 178   | 29.42 |        | 84  | 47.19  | 94  | 52.81                |          |        |
| No   | 427   | 70.58 |        | 251 | 58.78  | 176 | 41.22                | 6.830    | 0.009* |
| <b>Status of having a family member or acquaintance died due to COVID-19</b>                     |       |       |        |     |        |     |                      |          |        |
| Yes  | 131   | 21.65 |        | 58  | 44.27  | 73  | 55.73                |          |        |
| No   | 474   | 78.35 |        | 277 | 58.44  | 197 | 41.56                | 8.332    | 0.004* |
| <b>Status of the perceived effect of distance learning due to COVID-19 pandemic on education</b> |       |       |        |     |        |     |                      |          |        |
| Negative Effect  | 358   | 59.17 |        | 181 | 50.56  | 177 | 49.44                |          |        |
| No Effect  | 108   | 17.85 |        | 69  | 63.89  | 39  | 36.11                |          |        |
| Positive Effect  | 139   | 22.98 |        | 85  | 61.15  | 54  | 38.85                | 8.405    | 0.015* |

\*p<0.05; \*\*p<0.001; n: frequency; %: percentage

provided by the state and 72 (11.90%) of them mentioned that they did not hold any insurance. In all, 406 (67.11%) of the individuals in the study lived in İstanbul, while 199 (32.89%) of them lived in other cities. During the COVID-19 pandemic, a total of 361 (59.67%) of the individuals in the study mentioned that the income they earned decreased, while 244 (40.33%) of them mentioned that it did not change. A total of 103 (17.02%) of the students who attended the research mentioned that they had a family member dismissed by their employer due to the COVID-19 pandemic, while 502 (82.98%) did not. In all, 178 (29.42%) of the participants mentioned that they had a family member with a chronic disease being cared for at home, while 427 (70.58%) did not. A total of 131 (21.65%) of the students mentioned that they lost a family member or acquaintance due to COVID-19, while 474 (78.35%) did not. In all, 358 (59.17%) of the individuals in the study mentioned that they perceived a negative effect of distance learning, 139 (22.98%) mentioned that they perceived a positive effect of distance learning and 108 (17.85%) mentioned that they did not perceive any effect due to the COVID-19 pandemic on education.

According to the mean values in Table 2, it is found that the average generalised anxiety disorder score of participants ( $9.39 \pm 5.81$ ) is lower than the cut-off point of 10 specified by Spitzer et al.<sup>15</sup>, while it is significantly higher than the cut-off point of 8 in the Turkish sample by Konkan et al.<sup>16</sup>. In addition, considering the cut-off points specified by Spitzer et al.<sup>11</sup>, the generalised anxiety disorder points of the participant are categorised, and percentages are presented in Figure 1. It is observed that 142 (23.47%) of the students are having no anxiety, 193 (31.90%) are having mild anxiety, 149 (24.63%) are having moderate anxiety, and 121 (20.00%) are having severe anxiety.

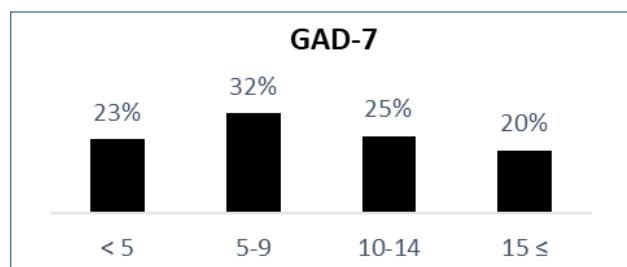
According to the Pearson correlation analysis results in Table 2, there is no significant relationship found between age and generalised anxiety disorder scores ( $r_{(603)} = 0.07$ ,  $p > 0.05$ ) of students, while there is a significant positive relationship found between the number of somatic symptoms and generalised anxiety disorder scores ( $r_{(603)} = 0.57$ ,  $p < 0.001$ ) of university students. In addition, the internal consistency coefficient of the GAD-7 Scale obtained in this study is  $\alpha = 0.91$  (Table 2).

The questions for the prevalent somatic symptoms seen during the last 15 days of COVID-19 contain 19 symptoms. According to the answers that are presented in Figure 2 it is observed that 470 (77.69%) of the students who participated in the study had a sleeping disorder, 454 (75.04%) of them had weakness and fatigue, 438 (72.4%) of them had unease, 432 (71.4%) of them had headaches, 263 (43.47%) of them had stomach problems, 243 (40.17%) of them had hot flashes, 226 (37.36%) of them had muscle pain, 225 (37.19%) of them had lack of appetite, 207 (34.21%) of them had heart throb, 170 (28.1%) of them had pins and needles or tingling sensations, 169 (27.93%) of them had nausea, 151

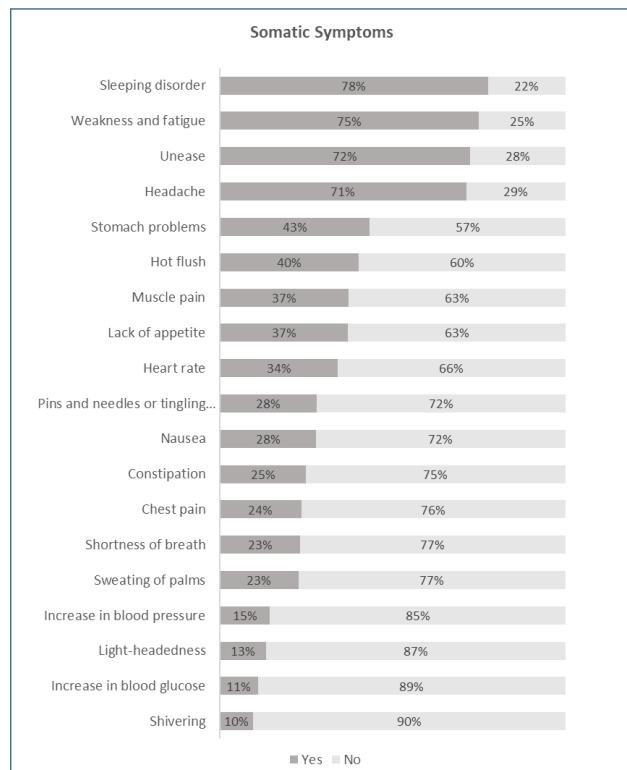
**Table 2:** Correlations between variables, mean and standard deviation values

| Variables                       | M     | SD   | 1. | 2.   | 3.     |
|---------------------------------|-------|------|----|------|--------|
| 1. Generalized anxiety disorder | 9.39  | 5.81 | -  | 0.07 | 0.57** |
| 2. Age                          | 21.69 | 2.11 |    | -    | 0.03   |
| 3. Number of somatic symptoms   | 6.88  | 4.30 |    |      | -      |

\* $p < 0.05$ ; \*\* $p < 0.001$ ; M: mean; SD: standard deviation



**Figure 1:** Distribution of generalized anxiety disorder levels



**Figure 2:** Prevalence of somatic symptoms

(24.96%) of them had constipation, 143 (23.64%) of them had chest pain, 141 (23.31%) of them had shortness of breath, 138 (22.81%) of them had sweating of the palms, 88 (14.55%) of them had an increase blood pressure, 81 (13.39%) of them had light-headedness, 67 (11.07%) of them had an increase in blood glucose and 58 (9.59%) of them had shivering during last 15 days of the COVID-19 pandemic.

## Comparison Tests

According to the percentages and the chi-square test of independence results, which can be seen in Table 1, it is found that female students were more likely to have a GAD-7 score  $\geq 10$  (47.70%) as compared to male students (38.97%) ( $\chi^2_{(1,N=605)} = 4.263, p < 0.05$ ). Students who had no health insurance were more likely to have a GAD-7 score  $\geq 10$  (59.72%) as compared to others ( $\chi^2_{(3,N=605)} = 8.811, p < 0.05$ ). Students who lived in other cities were more likely to have a GAD-7 score  $\geq 10$  (51.25%) compared to students who lived in İstanbul ( $\chi^2_{(1,N=605)} = 5.272, p < 0.05$ ). Students who had a family member dismissed due to the COVID-19 pandemic were more likely to have a GAD-7 score  $\geq 10$  (55.34%) as compared to others ( $\chi^2_{(1,N=605)} = 5.764, p < 0.05$ ). Students who had a family member with a chronic disease being cared for at home were more likely to have a GAD-7 score  $\geq 10$  (52.81%) as compared to others ( $\chi^2_{(1,N=605)} = 6.830, p < 0.01$ ). Students who had a family member or acquaintance that died due to COVID-19 were more likely to have a GAD-7 score  $\geq 10$  (55.73%) as compared to others ( $\chi^2_{(1,N=605)} = 8.332, p < 0.01$ ). Students who perceived a negative effect of distance learning due to the COVID-19 pandemic on the education process were more likely to have a GAD-7 score  $\geq 10$  (49.44%) as compared to others ( $\chi^2_{(2,N=605)} = 8.405, p < 0.05$ ).

## DISCUSSION

The main purpose of this study is to evaluate the psychological state of Turkish university students during the COVID-19 pandemic and to investigate the factors that affect their anxiety in the sample of a private university.

Results indicate that 463 (76.53%) of the students had anxious symptoms during the COVID-19 pandemic. Among the students, 193 (31.90%) had mild anxiety, 149 (24.63%) had moderate anxiety, and 121 (20.00%) had severe anxiety. In this aspect, our findings are in a parallel line with past studies in the literature. In the study conducted on a sample of 7,143 college students in China by Cao et al.<sup>4</sup>, it is reported that 1,776 (24.90%) of the students had anxious symptoms during the COVID-19 pandemic, of which 1,518 (21.30%) of the students had mild anxiety, 196 (2.70%) of the students had moderate anxiety, and 62 (.90%) of the students had severe anxiety. Also, in the study conducted in the sample of 5,461 individuals in China by Lin et al.<sup>17</sup>, it is reported that 2,151 (41.30%) of the individuals had anxious symptoms during the COVID-19 pandemic, of which 1,289 (22.90%) of the individuals had mild anxiety, 521 (9.20%) of the individuals had moderate anxiety, and 521 (9.20%) of the individuals had severe anxiety. In the study conducted on a sample of 237 college students in the US by Perz et al.<sup>18</sup> it is reported that 137 (58.00%) of the students had anxious symptoms during the COVID-19 pandemic of which 59 (25.00%) of the students had mild anxiety, 45 (19.00%) of the students had moderate anxiety and 33 (14.00%) of the students

had severe anxiety<sup>18</sup>. In the study conducted on a sample of 178 Bezmialem Foundation University Medical Students in Turkey by Bilgi et al.<sup>19</sup> it is reported that 132 (74.20%) of students had anxious symptoms during the COVID-19 pandemic of which 66 (37.10%) of the students had mild anxiety, 31 (17.40%) of the students had moderate anxiety and 35 (19.70%) of the students had severe anxiety. Compared to Cao et al.<sup>4</sup> (24.90%), Lin et al.<sup>17</sup> (41.30%) and Perz et al.<sup>18</sup> (58.00%), in our study, it is reported that a significant percentage of students (76.53%) had anxious symptoms during the COVID-19 pandemic, which is in line with the study by Bilgi et al.<sup>19</sup> (74.20%). Although the results obtained in the mentioned studies and our study provided findings that support the idea of the students having anxious symptoms because they are affected by the COVID-19 pandemic, it is not possible to make a scientific conclusion unless comparing the pre-pandemic data of individuals in the same sample. Considering the timeline limitation, it can be evaluated as a more scientific approach to compare the post-pandemic data of individuals in the sample to make this inference in future studies.

Considering the duration between our study and the compared studies, in this duration, situations such as the predicted negative impact of the COVID-19 pandemic on future employment<sup>20</sup>, the interruption of interpersonal communication during the mass isolation process, the increasing media reporting about the increase in the number of infections and mortality<sup>21</sup> the spread of the infection in the country and the world, the government action demonstrating that the situation is serious and the government concern that it could get worse<sup>22</sup> may explain the higher proportion of individuals affected by anxiety in this study as compared to the mentioned studies. The findings of this study regarding the proportion of individuals affected by anxiety are in line with recent articles demanding mental health care for people affected by the COVID-19 pandemic<sup>4,5,20,23,24</sup>.

The COVID-19 pandemic has raised particular questions, especially for medical schools, because frequent rotations between departments and hospitals make medical students potential vectors for COVID-19<sup>25</sup>. University students may be considered a vulnerable population regarding mental health problems<sup>26</sup>, especially due to reasons such as having difficulties in the transition to adulthood and financial challenges. Studies indicated that major pandemic processes, such as COVID-19 and the swine flu, have had many negative effects on university students and society<sup>5,8,20-27</sup>. In a study conducted in the Republic of Zambia, it is reported that there is likely to be a drop in the pass percentage of secondary school students in national examinations, considering the school's academic calendar was abruptly disturbed due to the early untimely closure of all schools<sup>28</sup>. Also, Husky et al.<sup>26</sup> indicated that French university students experienced increased anxiety, as well as moderate to severe stress, and students who lived apart from their parents were disproportionately affected during confinement<sup>26</sup>. Additionally, the results of this study indicated that

students who perceived a negative effect of distance learning on the education process due to the COVID-19 pandemic were more likely to have a GAD-7 score  $\geq 10$  (49.44%) as compared to others.

Various studies among university students have shown that women are significantly more likely to develop anxiety than men<sup>29</sup>. In the COVID-19 pandemic process, some studies revealed that women have higher anxiety levels compared to men<sup>23,30,31</sup>. In a similar line with the literature, in this study, it was found that female students were more likely to have anxiety when compared with male students.

In our study, it has been revealed that students who live in smaller cities were more likely to have anxiety than students who live in Istanbul. In the study conducted by Chang et al.<sup>32</sup> among 3,881 university students, it was determined that students living in rural areas during the COVID-19 pandemic had higher anxiety levels than those living in cities<sup>32</sup>. Because the economic, cultural, and educational resources in urban areas are richer/more accessible than in rural areas, the infrastructure and physical conditions in cities can increase the chance of protection from infection.

The anxiety felt about the current pandemic can especially arise with increasing somatic problems, such as fatigue, pain, and gastrointestinal discomfort. In our study, there was a significant positive relationship found between the number of somatic symptoms and the generalised anxiety disorder scores of university students. Similar to our study, Shevlin et al.<sup>33</sup> showed a positive relationship between generalised anxiety, anxiety specific to COVID-19 and somatic symptoms. In addition, Yuan et al.<sup>21</sup> found that somatic symptoms decreased as anxiety scores decreased during the first 2 weeks of the COVID-19 pandemic. In this context, it can be thought that the level of generalised anxiety disorder individuals

had in the COVID-19 pandemic has reached a level that will affect the prevalence of somatic symptoms. An especially significant number of the students had a sleeping disorder (77.69%), weakness and fatigue (75.04%), unease (72.4%) and headache (71.4%).

According to our study, which supports other studies<sup>4,5,20,23,24</sup> in the literature, students who had a family member dismissed due to the COVID-19 pandemic, students who had a family member with a chronic disease being cared for at home, and students who had a family member or acquaintance that died due to COVID-19 were more likely to have anxiety as compared to others. Due to the changing living conditions, the number of identified risk factors is also increasing. For example, the presence of elderly family members at home; infected family, friends, and acquaintances; having chronic illnesses; and lack of health insurance may cause individuals to worry. During the COVID-19 pandemic suddenly losing a family member because of the huge increase in the death rate in Turkey and in the world may constitute a risk to reduce the physical and mental health of individuals<sup>34</sup>.

These data can be taken into consideration regarding the measures to be taken to prevent the anxiety levels of students from increasing during the COVID-19 pandemic. Accordingly, when faced with situations that endanger public health, students need the support of their families, society and institutions to reduce their anxiety levels. When evaluated within the framework of social services, it is also the function and responsibility of universities to provide support for pandemic control. In this context, it would be beneficial for universities to plan for acute and long-term psychological services and to cooperate with the government to provide timely crisis-oriented psychological services.

## REFERENCES

- Phua J, Weng L, Ling L, Egi M, Lim CM, Divatia JV, et al. Intensive care management of coronavirus disease 2019 (COVID-19): challenges and recommendations. *Lancet Resp Med.* 2020;8(5):506-17. [https://doi.org/10.1016/S2213-2600\(20\)30161-2](https://doi.org/10.1016/S2213-2600(20)30161-2)
- Xiang YT, Yang Y, Li W, Zhang L, Zhang Q, Cheung T, et al. Timely mental health care for the 2019 novel coronavirus outbreak is urgently needed. *Lancet Psychiatr.* 2020;7(3):228-9. [https://doi.org/10.1016/S2215-0366\(20\)30046-8](https://doi.org/10.1016/S2215-0366(20)30046-8)
- Liu J, Zhu Q, Fan W, Makamure J, Zheng C, Wang J. Online mental health survey in a medical college in China during the COVID-19 outbreak. *Front Psychiatry.* 2020;11:459. <https://doi.org/10.3389/fpsyg.2020.00459>
- Cao W, Fang Z, Hou G, Han M, Xu X, Dong J, et al. The psychological impact of the COVID-19 epidemic on college students in China. *Psychiatry Res.* 2020;287:112934. <https://doi.org/10.1016/j.psychres.2020.112934>
- Huang Y, Zhao, N. Generalized anxiety disorder, depressive symptoms and sleep quality during COVID-19 outbreak in China: a web-based cross-sectional survey. *Psychiatry Res.* 2020;288:112954. <https://doi.org/10.1016/j.psychres.2020.112954>
- Odriozola-González P, Planchuelo-Gómez A, Irurtia MJ, Luis-García R. Psychological effects of the COVID-19 outbreak and lockdown among students and workers of a Spanish university. *Psychiatry Res.* 2020;290:113108. <https://doi.org/10.1016/j.psychres.2020.113108>
- Li S, Wang Y, Xue J, Zhao N, Zhu T. The impact of COVID-19 epidemic declaration on psychological consequences: a study on active Weibo users. *Int J Environ Res Public Health.* 2020;17(6):2032. <https://doi.org/10.3390/ijerph17062032>
- Restian A. Freedom of learning in the "elementary arts and culture" subject the character-based covid-19 pandemic. *J Interdiscipl Art Educ.* 2020;1(1):57-64.
- Sahu P. Closure of universities due to Coronavirus Disease 2019 (COVID-19): impact on education and mental health of students and academic staff. *Cureus.* 2020;12(4):e7541. <https://doi.org/10.7759/cureus.7541>
- Serin EK, Doğan R. The Relationship Between Anxiety and Hopelessness Levels Among Nursing Students During the COVID-19 Pandemic and related factors. *OMEGA J Death Dying.* 2021;00302228211029144. <https://doi.org/10.1177/00302228211029144>

11. Demir H, Örgev C, Biçer İ, Demir H, Aydin OA, Şen E, Özystal O. The Psychological Impact of the COVID-19 Pandemic on University Students in Turkey: A Foundation University Case. *J Int Health Sci Management.* 2020;6(12):25-33.
12. Gunduz A, Gundogmus I, Engin BH, Isler A, Sertcelik S, Yasar AB. Effects of adverse childhood events over metacognitions, rumination, depression and worry in healthy university students. *Annals Med Res.* 2019;26(7):1394-401.  
<https://doi.org/10.5455/annalsmedres.2019.05.269>
13. Etikan I, Musa AS, Alkassim RS. Comparison of convenience sampling and purposive sampling. *Am J Theor Appl Statist.* 2016;5(1):1-4.  
<https://doi.org/10.11648/j.ajtas.20160501.11>
14. Yazıcıoğlu Y, Erdoğan S. SPSS applied scientific research methods. Ankara: Detay Publishing. 2004:15. Spitzer RL, Kroenke K, Williams JB, Löwe B. A brief measure for assessing generalized anxiety disorder: the GAD-7. *Arch Intern Med.* 2006;166(10):1092-7.  
<https://doi.org/10.1001/archinte.166.10.1092>
15. Konkan R, Şenormancı O, Güçlü O, Aydin E, Sungur MZ. Validity and reliability study for the Turkish adaptation of the Generalized Anxiety Disorder-7 (GAD-7) scale. *Arch Neuropsychiatr.* 2013;50(1):53-8.  
<https://doi.org/10.4274/npa.y6308>
16. Lin LY, Wang J, Ou-Yang XY, Miao Q, Chen R, Liang FX, et al. The immediate impact of the 2019 novel coronavirus (COVID-19) outbreak on subjective sleep status. *Sleep Med.* 2021;7:348-54.  
<https://doi.org/10.1016/j.sleep.2020.05.018>
17. Perz CA, Lang BA, Harrington R. Validation of the Fear of COVID-19 Scale in a US college sample. *Int J Ment Health Addict.* 2020;1-11.  
<https://doi.org/10.1007/s11469-020-00356-3>
18. Bilgi K, Aytaş G, Karatoprak U, Kazancioğlu R, Özçelik S. The effects of Coronavirus disease 2019 outbreak on medical students. *Front Psychiatry.* 2021;12:637946.  
<https://doi.org/10.3389/fpsyg.2021.637946>
19. Wang C, Zhao H. The impact of COVID-19 on anxiety in Chinese university students. *Front Psychol.* 2020;11:1168.  
<https://doi.org/10.3389/fpsyg.2020.01168>
20. Yuan S, Liao Z, Huang H, Jiang B, Zhang X, Wang Y, et al. Comparison of the indicators of psychological stress in the population of Hubei Province and non-endemic provinces in China during two weeks during the coronavirus disease 2019 (COVID-19) outbreak in February 2020. *Med Sci Monit.* 2020;26:e923767.  
<https://doi.org/10.12659/MSM.923767>
21. Brooks SK, Webster RK, Smith LE, Woodland L, Wessely S, Greenberg N, et al. The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *Lancet.* 2020;395(10227):912-20.  
[https://doi.org/10.1016/S0140-6736\(20\)30460-8](https://doi.org/10.1016/S0140-6736(20)30460-8)
22. Rakhmanov O, Dane S. Knowledge and anxiety levels of African university students against COVID-19 during the pandemic outbreak by an online survey. *J Res Med Dental Sci.* 2020;8(3):53-6.
23. Özdede M, Sahin S. Views and anxiety levels of Turkish dental students during the COVID-19 pandemic. *J Stomatol.* 2020;73(3):123-8.  
<https://doi.org/10.5114/jos.2020.96867>
24. Ahmed H, Allaf M, Elghazaly H. COVID-19 and medical education. *Lancet Infectious Dis.* 2020;20(7):777-8.  
[https://doi.org/10.1016/S1473-3099\(20\)30226-7](https://doi.org/10.1016/S1473-3099(20)30226-7)
25. Husky MM, Kovess-Masfety V, Swendsen JD. Stress and anxiety among university students in France during COVID-19 mandatory confinement. *Comprehensive Psychiatry.* 2020;102:112191.  
<https://doi.org/10.1016/j.comppsych.2020.152191>
26. Rubin GJ, Amlöt R, Page L, Wessely S. Public perceptions, anxiety, and behaviour change in relation to the swine flu outbreak: cross sectional telephone survey. *BMJ.* 2009;339:b2651.  
<https://doi.org/10.1136/bmj.b2651>
27. Sintema EJ. Effect of COVID-19 on the performance of grade 12 students: Implications for STEM education. *Eurasia J Math Sci Technol Educ.* 2020;16(7):em1851.  
<https://doi.org/10.29333/ejmste/7893>
28. Gao W, Ping S, Liu X. Gender differences in depression, anxiety, and stress among college students: a longitudinal study from China. *J Affective Disorders.* 2020;263:292-300.  
<https://doi.org/10.1016/j.jad.2019.11.121>
29. Al-Rabiah A, Temsah MH, Al-Eyadhy AA, Hasan GM, Al-Zamil F, Al-Subaie S, et al. Middle East Respiratory Syndrome-Corona Virus (MERS-CoV) associated stress among medical students at a university teaching hospital in Saudi Arabia. *J Infec Public Health.* 2020;13(5):687-91.  
<https://doi.org/10.1016/j.jiph.2020.01.005>
30. Hu Y, Chen Y, Zheng Y, You C, Tan J, Hu L, et al. Factors related to mental health of inpatients with COVID-19 in Wuhan, China. *Brain Behav Immunity.* 2020;89:587-93.  
<https://doi.org/10.1016/j.bbi.2020.07.016>
31. Chang J, Yuan Y, Wang D. Mental health status and its influencing factors among college students during the epidemic of COVID-19. *Nan Fang Yi Ke Da Xue Xue Bao.* 2020;40(2):171-6.  
<https://doi.org/10.12122/j.issn.1673-4254.2020.02.06>
32. Shevlin M, McBride O, Murphy J, Miller-Gibson J, Hartman T, Levita L, et al. Anxiety, depression, traumatic stress, and COVID-19 related Anxiety in the UK general population during the COVID-19 pandemic. *BJPsych Open.* 2020;6(6):e125.  
<https://doi.org/10.1192/bjo.2020.109>
33. Verdery AM, Smith-Greenaway E, Margolis R, Daw J. Tracking the reach of COVID-19 kin loss with a bereavement multiplier applied to the United States. *Proc Natl Acad Sci.* 2020;117(30):17695-701.  
<https://doi.org/10.1073/pnas.2007476117>