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Depression, Anxiety and Stress Symptoms and Substance Use among Health Care Students in Turkey during the COVID-19 Pandemic

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Abstract

Aim: People of all ages have been physically and psychologically impacted by the COVID-19 pandemic throughout the world. Due to their predisposition to high levels of stress, anxiety, and sadness in general, university students are especially susceptible to the psychological effects of COVID-19. The purpose of this study was to assess the perspectives of health care students regarding substance abuse, stress and anxiety, and depression within the COVID-19 pandemic.

Materials and methods: This cross-sectional survey includes 1126 university students. The data collecting forms were the Descriptive Info Form and the Depression, Anxiety and Stress Scale (DASS). ANOVA, post hoc tests (Tukey, LSD), and t-tests were used to analyze the individuals' scale scores and descriptive characteristics.

Results: The mean depression, anxiety and stress score was 16.280±7.942, 17.837±8.257, and 17.686±8.247, respectively. In this study, statistically significant differences were found in terms of gender, education level, income level, use of any addictive substance, use of any addictive substance by a relative, changes in substance use during the pandemic period and mean DASS subscale score ($p<0.05$).

Conclusions: Among university students studying health care, correlations between substance abuse and symptoms of stress, anxiety, and depression were found throughout the epidemic. Health experts may find it helpful to organize initiatives to lessen substance addiction in order to assist pupils in overcoming psychological issues during trying times like the COVID-19 pandemic.

Keywords: Anxiety, Addiction, COVID-19, Depression, Students, Stress

Introduction

In Wuhan, China, the first coronavirus infection case of 2019 (COVID-19) was reported in December of that year [1]. The global pandemic of COVID-19 is affecting individuals worldwide and has emerged as a significant public health concern [2]. The COVID-19 pandemic was labeled a "pandemic" by the World Health Organization (WHO) in March 2020 after it was originally categorized as a "international public health emergent situation" in January 2020 [3]. According to the World Health Organization's most recent figures, 6.64 million people have died as a result of the COVID-19 pandemic, and 646 million individuals have infected the virus [3]. In Turkey, 16.9 million individuals have been diagnosed with COVID-19, and 101 thousand individuals have died [3]. Throughout the COVID-19 outbreak, many measures have been taken and changes have been made to stop the expansion of the virus [4]. One of these was the implementation curfews, home quarantine and isolation to prevent the spread of the pandemic, which resulted in education systems being forced to use online platforms [5]. These

changes negatively affected individuals' social lives [6]. The pandemic also caused psychological problems in individuals [7]. According to a study in China, symptoms of anxiety, depression and stress increased among individuals at the onset of the pandemic [8,9]. Lin reviewed the perceptions of people regarding COVID-19 and reported that experiences of loss, grief, anxiety, fear of being sick and stigmatization during the pandemic caused psychosocial problems [10].

Although COVID-19 has affected all layers of society, university students may be the group most affected by this situation [11]. For university students forced to stay at home and fully dependent on online education, this situation has emerged as unusual and unexpected, especially for those who have no experience with e-learning or the necessary facilities [12]. In these circumstances, students faced psychological problems caused by the pandemic as well as uncertainties related to their education [6]. The stress and subjective well-being levels of university students increased and decreased, respectively, throughout the outbreak [13]. Kimhi et al. stated that an increase in feelings of stress and fear among college students in Israel led to a reduce in their stages of hope and morale [14]. University students also showed notable increases in unhealthy habits during the pandemic [16, 17], including smoking, drinking alcohol, using drugs, and not exercising [15]. In their study of university students, Sander et al. observed that the severity of mental issues and alcohol and drug usage were enhanced during the pandemic [18]. In a research among French university students, Bourion-Bédès et al. reported a rise in cigarette usage during the pandemic [16]. According to a survey by Gritsenko et al. of university students in Belarus and Russia, during the COVID-19 epidemic, there was a surge in the use of cigarettes and alcohol by students [19]. In a study involving Chinese university students, Ahmed et al. found that the pandemic period raised students' alcohol consumption to a dangerous level [20].

According to the literature, children were more prone to experience stress, anxiety, smoking, and drug use throughout the COVID-19 period. In addition, studies carried out in a number of countries have examined the stress, anxiety, and depression levels of college students as well as their perspectives on drug addiction throughout the pandemic. Turkey hasn't, however, produced many studies. The current study looked at students' opinions about substance usage, stress and anxiety symptoms, and depression levels at a health sciences university in light of the COVID-19 epidemic.

Materials and methods

The University of Health Sciences conducted this cross-sectional survey in April and May of 2021. The Gülhane University of Health Sciences Scientific Research Ethics Committee has approved this study (No. 2021/162). Regarding the subject matter of this essay, the writers have no relevant conflicts of interest to declare. Each author takes ownership of the article. 21000 University of Health Sciences students—14915 undergraduates and 6185 associate degree holders—made up the study population. The required sample size for this non-homogeneous population was estimated using the sampling formula to be n = 1016 with a 95% confidence interval and ± 3% sampling error. A total of 1126 individuals were contacted for this investigation. Google Forms was used in the creation of the dataset. It was collected using a random sampling method via WhatsApp. The participants were informed of the goal of the study at the outset of the data collecting form, and their consent was obtained. Participants received notification that no personal information will be shared with third parties and that their responses would never be utilized in conjunction with their identities. The Depression, Anxiety, and Stress Scale and sociodemographic characteristics comprise the two sections of the survey.

The sociodemographic characteristics questionnaire consisted of 12 questions to determine the sociodemographic characteristics and addictive substance (cigarettes, alcohol, etc.) use of the participants participating in this study.

- **Depression, Anxiety and Stress Scale:** To measure the levels of stress, anxiety, and depression, the 42-item DASS was used. The scale is divided into three smaller scales, with 14 items on each scale that are rated from 0 to 3, with 0 denoting nothing at all and 3 denoting a lot or the majority of the time. Every subscale has a possible score between 0 and 42. Depression scores vary from 0 to 9, with mild depression being represented by 10 to 13, moderate depression by 14 to 20, severe depression by 21 to 27, and extremely severe depression by 28 points or higher. The range of scores is as follows: 0–7 denotes a normal state; 8–9, mild anxiety; 10–14, moderate anxiety; 15–19, severe anxiety; and 20 and higher, extremely severe anxiety. The stress rating system is as follows: Normal stress is indicated by a score of 0–14, mild stress by 15–18, moderate stress by 19–25, severe stress by 26–33, and extremely severe stress by 34 and higher. In the initial investigation, the scale's subdimensions of tension, anxiety, and sadness had Cronbach's alphas of 0.90, 0.91, and 0.84. The validity and reliability of the scale were assessed for the Turkish population by Akin and Çetin [21]. The depression subdimension had internal consistency coefficients (Cronbach's alpha) of 0.92, the anxiety subdimension of 0.86, and the stress subdimension of 0.88, according to the authors' findings. In our study, the Cronbach's alpha values for the stress, anxiety, and depression aspects were 0.93, 0.92, and 0.93, respectively.

Statistical analysis

A statistical application called SPSS 21 was used to analyze the data. The descriptive traits of the subjects and the scale scores were examined using T tests, one-way analysis of variance (ANOVA), and post hoc (Tukey, LSD) analyses.

Results

This study included 1126 participants: 46.6% were male, 53.4% were female, 44.4% were nursing students, and 49.3% had a middle-income level. The sample's characteristics are displayed in Table 1. The participants' average age was 21.23 years (SD = 4.16). According to the DASS 42, the average scores for depression, anxiety, and stress were as follows: moderate (16.28±7.94) for depression, severe (17.83±8.25) for anxiety, and medium (17.68±8.24) for stress.

When the mean scores of the depression, anxiety and stress levels of the participants were evaluated according to the scores obtained for each subscale of the DASS, the frequency of moderate depression was 37.7%, there were 44.8% cases of really severe anxiety and 27.5% cases of moderate stress (Table 3).

In the present study, the mean anxiety score of women (17.35±8.60) was significantly lower than that of men (18.38±7.80) ($p<0.05$). When the depression, anxiety and stress subscale scores were compared according to who the participants lived with, the scores for those living alone were 18.88±6.95, 20.57±6.74, and 20.41±6.79, respectively, and were greater than those for those living with family and friends ($p<0.05$).

When students' depression (19.37±6.28), anxiety (21.71±6.65) and stress (20.43±7.03) scores were analyzed

Table 1 Distribution of participants by characteristics (n=1126)

Characteristics		N %
Sex	Female	601%53.4
	Male	525%46.6
Number of siblings	1	219%19.4
	2	694%61.6
	3	213%18.9
Living situation	Family	389%34.5
	Friends	644%57.2
	Alone	93%8.3
Faculty	Nursing	500%44.4
	Vocational School of Health	202%17.9
	Pharmacy	101%9.0
	Dental	203%18.0
	Medicine	120%10.7
Family situation	Parents together	1035%91.9
	Separated parents	91%8.1
Income Level	Low	162%14.4
	Middle	555%49.3
	High	409%36.3
Do you use any addictive substances (tobacco, alcohol or drugs)?	Yes	383%34.0
	No	743%66.0
Do you know anyone in your life who uses addictive substances (tobacco, alcohol, or drugs)?	Yes	570%50.6
	No	556%49.4
When did you start using any addictive substance (tobacco, alcohol or drugs)?	1 year ago	50%13.1
	2 years ago	115%30.0
	3 years ago or more	120%31.3
	Pandemic Period	98%25.6
Has there been any change in your addictive substance use during the pandemic (tobacco, alcohol or any other substance)?	Do not use	740%65.7
	No change	123%10.9
	Increased	263%23.4
How would you describe your mood during the pandemic?	Concerned	204%18.1
	Unhappy	204%18.1
	Scared	101%9.0
	Happy	79%7.0
	Bored	538%47.8

Table 2 DASS subscale scores of participants

	Mean (SD)
DASS Depression score	16.28±7.94
DASS Anxiety score	17.83±8.25
DASS Stress score	17.68±8.24

Table 3 Severity of the participants' depression, anxiety and stress (N=1126)

Severity	Depression	Anxiety	Stress
	N %	N %	N %
Normal	226% 20.1	131%11.6	422%37.5
Mild	178%15.8	58% 5.2	205%18.2
Moderate	424%37.7	203%18.0	310%27.5
Severe	207%18.4	230%20.4	153%13.6
Extremely severe	91%8.1	504%44.8	36%3.2

according to the faculty they studied at, the scores of medical faculty students were higher than those of the remaining pupils, and a statistically significant distinction was discovered between them. ($p<0.05$). The depression rating of middle-income participants was 16.90±8.09, the anxiety score was 18.66±8.24, and the stress score was 18.445±8.238, which were higher than those of participants with low and high incomes ($p<0.05$). Those who felt fear during the pandemic had a depression score of 18.32±7.46, an anxiety score of 19.87±7.63, and a stress score of 19.72±7.77. The scores of the participants who experienced fear during the pandemic were significantly greater than those of the participants who were anxious, unhappy, happy or bored ($p<0.05$) (Table 4).

In the present study, the mean depression score of the participants who used addictive substances (17.16±7.70) was greater than that of the participants who did not use addictive substances (15.82±8.03) ($p=0.007$). The individuals who used addictive substances had an average anxiety level (18.85±8.01) of greater than that of the participants without addictive substance use (17.31±8.33) ($p=0.003$). The individuals who used addictive substances had an average stress level (18.5±8.24) of greater than that of the participants without addictive substance use (17.26±8.22) ($p=0.017$). The mean depression score (16.85±8.34) of the participants with relatives who used addictive substances was greater than that (15.69±7.46) of the participants without relatives with addictive substance use ($p=0.014$). Participants who knew someone who used addictive drugs had a mean anxiety score of 18.32±8.31, which was higher than the mean anxiety score of 17.33±8.17 for those who did not know anybody who used addictive substances ($p=0.045$).

Those who experienced elevated stress during the pandemic time had mean depression ratings of 16.67±7.95, which was higher than those who did not experience elevated stress during the pandemic period (14.25±7.56) ($p=0.001$). Participants who experienced elevated stress during the pandemic (18.26±8.18) had mean anxiety scores that were higher than those of participants who did not experience elevated stress during the pandemic (15.62±8.27) ($p=0.001$). Furthermore, the participants who reported higher levels of stress had a DASS stress subscale score of 18.08±8.27, which was higher than the participants who reported lower levels of stress ($p=0.001$). During the pandemic period, 25.6% of participants started using addictive substances. The DASS depression subscale score of participants whose use of addictive substances did not change during the pandemic was 17.94±7.38, the anxiety subscale score was 19.65±8.27, and the stress score was 19.260±8.348. These scores were significantly greater than the scores of participants who did not use addictive substances during the pandemic and those whose use increased ($p<0.05$) (Table 5).

Discussion

Using online surveys, this study looked at how stress, anxiety, and depression symptoms changed during the COVID-19 pandemic in 2021, as well as college students' use of addictive substances. The findings indicated a correlation between an increase in the severity of anxiety and depressed symptoms and a rise in the use of addictive substances. Over half of the university students who responded to this study said they felt more anxious, frightened, bored, and nervous throughout the pandemic. The students' mean DASS subscale scores revealed that their levels of stress, anxiety, and depression were respectively moderate, severe, and mild. A study among Jordanian health care students, in contrast to ours, found modest levels of anxiety [22]. In contrast to these investigations, depression, anxiety, and stress levels were shown to be normal in another study involving other

Table 4 Comparison of participant characteristics and DASS scores

Characteristic	N %	Depression	Anxiety	Stress
Sex		Mean±SD	Mean±SD	Mean±SD
Female	601%53.4	16.08±8.26	17.35±8.60	17.72±8.50
Male	525%46.6	16.51±7.57	18.39±7.80	17.64±7.97
t=		-0,911	-2,100	0,181
p=		0.360	0.035	0.857
Living situation				
Family	389%34.5	15.50±8.09	16.83±8.40	16.77±8.26
Friends	644%57.2	16.38±7.91	18.04±8.27	17.84±8.34
Alone	93%8.3	18.88±6.95	20.57±6.74	20.41±6.79
F=		7.021	8.287	7.677
p=		0.001	0.001	0.001
Post Hoc=		3>1, 3>2 (p<0.05)	2>1, 3>1, 3>2 (p<0.05)	2>1, 3>1, 3>2 (p<0.05)
Faculty				
Nursing	500%44.4	15.94±9.60	16.18±9.50	17.61±9.51
Vocational School of Health	202%17.9	16.72±6.29	19.42±6.86	17.93±7.19
Pharmacy	101%9	16.52±5.93	19.89±6.37	18.28±6.84
Dental	203%18	14.72±5.94	17.00±6.52	15.70±6.53
Medicine	120%10.7	19.37±6.28	21.71±6.65	20.43±7.03
F=		7.044	16.423	6.593
p=		0.001	0.001	0.001
Post Hoc=		5>1, 5>2, 5>3, 2>4, 5>4 (p<0.05)	2>1, 3>1, 5>1, 5>2, 2>4, 3>4, 5>4 (p<0.05)	5>1, 5>2, 1>4, 2>4, 3>4, 5>4 (p<0.05)
Income Level				
Low	162%14.4	16.51±8.40	17.58±8.59	17.97±8.51
Middle	555%49.3	16.90±8.09	18.66±8.24	18.445±8.238
High	409%36.3	15.33±7.45	16.81±8.02	16.540±8.041
F=		4.706	6.060	6.459
p=		0.009	0.002	0.002
Post Hoc=		2>3 (p<0.05)	2>3 (p<0.05)	2>3 (p<0.05)
How would you describe your mood during the pandemic?				
Concerned	204% 18.1	16.50±8.27	18.04±8.67	18.08±8.78
Unhappy	204% 18.1	17.16±8.00	17.91±8.03	17.97±8.42
Scared	101% 9	18.32±7.46	19.87±7.63	19.72±7.77
Happy	79% 7	15.19±8.20	17.64±8.51	17.05±8.25
Bored	538% 47.8	15.63±7.75	17.37±8.22	17.13±8.00
F=		3.638	2.007	2.457
p=		0.006	0.091	0.044
Post Hoc=		3>4, 2>5, 3>5 (p<0.05)		3>4, 3>5 (p<0.05)

F: ANOVA; t: Independent samples t test; Post Hoc: Tukey, LSD

Table 5 Comparison of participants' attitudes toward substance abuse and mean DAS scores

Characteristics	N %	Depression	Anxiety	Stress
		Mean±SD	Mean±SD	Mean±SD
Do you use any addictive substances (tobacco, alcohol or drugs)?				
Yes	383%34	17.16±7.70	18.85±8.01	18.50±8.24
No	743%66	15.82±8.03	17.311±8.33	17.26±8.22
t=		2.699	2.986	2.388
p=		0.007	0.003	0,017
Do you know anyone in your life who uses addictive substances (tobacco, alcohol, or drugs)?				
Yes	570%50.6	16.85±8.34	18.32±8.31	18.03±8.48
No	556%49.4	15.69±7.46	17.33±8.17	17.32±7.99
t=		2.449	2.003	1.433
p=		0.014	0.045	0.152
Increased stress during the pandemic				
Yes	942%83.7	16.67±7.95	18.26±8.18	18.08±8.27
No	184%16.3	14.25±7.56	15.62±8.27	15.64±7.80
t=		3.80	3.99	3.69
p=		0.001	0.001	0.001
When did you start using any addictive substances (tobacco, alcohol or any other substance)?				
1 years ago	50%13.1	18.10±7.09	20.12±7.55	19.68±7.92
2 years ago	115%30	16.04±7.10	18.73±7.24	17.87±7.34
3 Years and More	120%31.3	17.70±8.35	18.81±8.46	19.06±8.76
Pandemic Period	98%25.6	17.34±7.80	18.39±8.57	17.93±8.72
F=		1.279	0.528	0.900
p=		0.281	0.663	0.441
Has there been any change in your addictive substance use during the pandemic period (tobacco, alcohol or any other substance)?				
Not used	740%65.7	15.83±8.04	17.32±8.33	17.249±8.230
No change	123%10.9	17.94±7.38	19.65±8.27	19.260±8.348
Increased	263%23.4	16.76±7.80	18.44±7.87	18.179±8.161
F=		4.379	5.157	3.769
p=		0.013	0.006	0.023
Post Hoc=		2>1 (p<0.05)	2>1 (p<0.05)	2>1 (p<0.05)

F: ANOVA Test; t: Independent samples t test; Post Hoc: Tukey, LSD

university students [23]. Rehman et al. found that students had modest stress levels and moderate levels of anxiety and sadness in their study done during the pandemic [24]. These findings imply that health care students experience high levels of anxiety and despair due to their familiarity with severe suffering and their awareness of the pandemic's effects and scope.

Anxiety levels varied significantly when the mean DASS subscale score was broken down by sex in this study. Consequently, the mean anxiety score of male students was higher than that of female students. In contrast to our results, girls fared better than males on stress, anxiety, and depression measures in a research among Turkish university students who were not pursuing medical degrees during the COVID-19 epidemic [25]. Talapko et al. found that female sex was linked to higher DASS subscale scores in their research of health care students [26]. In line with the results of these investigations, a research carried out in Helsinki during the COVID-19 epidemic showed that female pupils outperformed their male counterparts on the DASS subscale [27]. The findings show that when faced with tough situations like pandemics, female pupils are more prone to have a fragile mental health state. Studies have shown that female students were more likely to be depressed and anxious [28, 29].

When the students' mean scores in our study were categorized by the faculty they were enrolled in, a substantial difference was discovered. As a result, students in the medical faculty had significantly higher mean scores for depression, stress, and anxiety when compared to students in other faculties. An Egyptian study [30] found that anxiety and despair are common among medical students. In Brazil, moderate-to-severe symptoms of sorrow and anxiety were reported by 46.17% of medical students [31]. According to study, university education departments' students tend to be less depressed, anxious, and stressed than their medical department counterparts [32]. These results demonstrated that both medical and non-medical students' mental health might benefit from attentive coping techniques.

The living situation of the students were shown to be significantly correlated with their mean DASS score. Accordingly, the mean depression score of the students who lived alone was greater than that of the students who lived with their families, while the mean anxiety and stress scores were greater for the students living with friends than for the students living with their families. Similar to our study, Aylie et al.'s investigation among Ethiopian university students during the pandemic found that those who did not reside with their family experienced significant levels of anxiety and anxiety severity [33].

In many studies conducted among university students, living with friends, living in dormitories and not living with family increased individuals' depression, anxiety and stress levels [26,34,35]. Those who stayed with their relatives reported being less anxious. Being away from home and the pandemic's negative consequences on students' lives were risk factors for mental health conditions such sadness, stress, and anxiety. These findings imply that stress, anxiety, and depression were negatively impacted by social isolation during the epidemic.

The study revealed a noteworthy association between the average DASS subscale score and the students' economic income level. Consequently, it was discovered that people with medium earnings scored higher on sadness, stress, and anxiety than people with high incomes. Depression among students during the COVID-19 epidemic was shown to be more common in individuals with lower means, according to Sander et al. A person's and their family's income declining is one of the causes contributing to an increase in anxiety and stress levels. At this stage, school administrators and institutions should identify students in need of economic support and inform them of and promote the necessary scholarships and funding sources.

In addition, during the pandemic period, students felt anxious, bored and scared, with increased stress levels. The COVID-19 pandemic, which affected the entire world, left students feeling nervous, depressed, anxious, tired, gloomy, stressed, and unhappy with life [36]. A different study found that students who had anxiety or depression during the COVID-19 pandemic also experienced tension, fear, or nervousness [8,9]. In the Bashir et al. research, about half of the health sciences students experienced depression during the pandemic [37]. The impact of this time period on people's mental health endures even when the epidemic and its limitations have been gone. Multidisciplinary research is essential for offering families and students training, adaptive strategies, and psychological support.

According to our research, most people did not see any appreciable changes in their use of alcohol, cigarettes, or other substances throughout the pandemic. Of those surveyed, 25% indicated they started using alcohol, cigarettes, or other drugs during the pandemic, and 23.4% reported their use of these drugs increased during the outbreak. There has been a rise in the use of drugs and alcohol by participants in another study among Turkish university students [38]. In Poland, the majority of university students surveyed claimed that the epidemic had had no discernible impact on their use of hard drugs, alcohol, nicotine, marijuana, THC, or other substances. A nearly similar proportion of students reported rising and falling alcohol and cigarette intake. A much larger number of respondents reported decreases rather than increases in the use of marijuana, THC, or hard drugs [39]. Many studies conducted during the COVID-19 pandemic found a correlation between an increase in alcohol consumption and an increase in alcohol usage overall [40]. These results might indicate that university students who were isolated from the outside world during the pandemic and had to stay at home due to quarantine used more alcohol, cigarettes, and other drugs as a coping mechanism for their lack of sociability. During our analysis, we found a strong relationship between the average scores on the DASS subscales and the use of any kind of drug (such as alcohol, cigarettes, etc.). Thus, students who used any form of addictive substance displayed higher levels of stress, anxiety, and despair in comparison to students who did not use any addictive substances. According to Dogan-Sander et al.'s study, depression and alcohol usage rose among college students during the pandemic [18]. These findings imply that students lack appropriate coping mechanisms and suffer from depression, anxiety, and stress during significant emergencies like epidemics. There are various restrictions on this study. First, it was not possible to ask questions about addictive behavior and depressive symptoms separately. The study's religious views and ideals were taken into consideration while asking about addictive drugs like alcohol, cigarettes, and others in a single question. Second, as only self-report measures were used, generalizability may be restricted because the results are restricted to a single Turkish health care university.

Conclusion

It was found that the study participants had moderate sadness and severe anxiety. During the epidemic, those with high scores for stress, anxiety, and sadness also used addictive substances. Medical faculty students exhibited higher levels of stress, anxiety, and depression than other students studying in health-related areas. Furthermore, it was shown that 25% of the participants began using drugs or alcohol during the epidemic. These findings suggest that health professionals

working in the fields of psychiatry and public health should undertake interdisciplinary research, trainings, and workshops to help students develop personal coping strategies and support networks in the event of various unforeseen circumstances, like pandemics, and to stop mental health issues like anxiety, stress, and depression from persisting after these events have passed.

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