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DETERMINING THE RELATIONSHIP BETWEEN HEALTH TECHNICIAN STUDENTS' ATTITUDES TO THE COVID-19 PANDEMIC AND INTOLERANCE OF UNCERTAINTY WITH DEPRESSION, ANXIETY, AND STRESS LEVELS

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Summary

Background: *This study aimed to identify the relationship between the attitudes of health technician students towards COVID-19 and their intolerance to uncertainty with depression, anxiety, and stress.*

Subjects and methods: *This cross-sectional study was conducted with health technician students at two public universities in western Turkey. Data were collected from January 29 to April 5, 2021. In this study, The Descriptive Data Form; Depression, Anxiety and Stress Scale-21; The Health Education Students' Attitude Scale towards the COVID-19 outbreak, and the Intolerance of Uncertainty Scale-12 were used. The electronic versions of the questionnaires were shared with students in WhatsApp groups.*

Results: *A total of 1132 students participated in the study and 23.2% of the students had mild, 21.6% moderate, and 2.8% severe depression. Additionally, 9.4% of the students had mild, 16.3% moderate, and 5.1% severe anxiety. Furthermore, 12.5% of the participants had mild and 5.5% had moderate stress. Smoking, prospective and inhibitory anxiety, negative perception of the state's efforts to prevent the outbreak, anxiety about the virus, and belief of intentional spread significantly affected depression, anxiety, and stress levels ($p<0.05$). Furthermore, the place of residence and the presence of acquaintances infected with COVID-19 significantly affected anxiety levels ($p<0.05$).*

Conclusions: *It may be beneficial to develop online psychoeducation and psychotherapy programs and to direct young people to these platforms during the social isolation process of COVID-19. Training in virus protection is also strongly recommended.*

Key words: *COVID-19 – depression – anxiety – stress - intolerance to uncertainty*

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INTRODUCTION

COVID-19 pandemic has brought not only the risk of death from viral infection, but also, for many, unbearable psychological pressures (WHO 2021a, Chirico et al. 2021b, Chirico et al. 2021c). Similar to other countries, Turkey has had many experiences not encountered in its recent past due to the COVID-19 outbreak. Individuals, institutions, and governments have taken various measures to overcome this difficult period and normalize again (Arslan & Filiz 2021, Chirico et al. 2021d, Duman 2020, Republic of Turkey Ministry of Health 2021). The pandemic has brought many restrictions to daily life. Mental health of young people who struggle with many psychosocial problems in their lives has been adversely affected during this period (Ghazawy et al. 2020, Kaya et al. 2021, Xiong et al. 2020).

The most common psychological disorder in psychological health evaluations of young people has been reported to be depression (Iqbal et al. 2015). It usually begins in childhood and adolescence and can last a lifetime (WHO 2013, WHO 2021b). Suicidal tendency increases with depression. Therefore, it is important to identify students with depressive symptoms (Duman 2020).

Stress is basically a physiological state and may worsen over time. All internal and external inducers can be sources of stress (Duman 2020). In general, stress plays a role in the adaptation of people to physiological and psychological conditions. Stress level is important for an individual's health. A low level of stress contributes to people's ability to cope with events, improve themselves, and be successful (Ghazawy et al. 2020). However, excessive stress can hinder people's coping skills and even lead to physical and psychological diseases (WHO 2013).

Individuals with anxiety disorders perceive uncertain or ambiguous situations as stressful and distressing, and thus may experience chronic anxiety. These people may believe that anxiety will help them cope with events they fear (Iqbal et al. 2015). However, in cases where uncertainty persists, intolerance to uncertainty may be a

triggering factor in the development of pathological anxiety and generalized anxiety disorder. The COVID-19 pandemic has been reported to increase anxiety disorders in young people (Ghazawy et al. 2020, Shala et al. 2021, WHO 2021a, Xiong et al. 2020). Moreover, The COVID-19 pandemic has caused anxiety, depression, sleep disorders, post-traumatic stress disorders and burnout syndrome in healthcare workers (Chirico et al. 2021a).

Intolerance to uncertainty is a condition arising from a group of negative beliefs about the consequences and implications of uncertainty. Intolerance to uncertainty is explained as concern, negative problem orientation, and cognitive avoidance habits. Intolerance to uncertainty has been explained to be an important cognitive risk factor for anxiety disorders and depression (Carleton et al. 2007, Elsharkawy & Abdelaziz 2020, Fedorenko et al. 2021, Zhuo et al. 2021).

After the emergence of the COVID-19 pandemic, the social and educational life of university students has completely changed (WHO 2021a). The effect of the measures taken for COVID-19 (closure of schools, public cafes, cinemas, parks, curfews, travel ban, and provision of priority COVID-19 treatment services in hospitals, etc.) on students' mental health is an important issue that needs examination.

In this study, our objective was to determine the relationship between the attitudes of health technician students towards the COVID-19 pandemic and the level of intolerance to uncertainty with depression, anxiety, and stress.

SUBJECTS AND METHODS

Research design and participants

This cross-sectional study was conducted at two public universities in western Turkey. The students (N= 1413) study at Vocational School of Health Services, which is an associate degree program that provides two-year education and trains health technicians in different fields. We aimed to reach the entire university without sample selection. A total of 1132 health technician students participated in our study, and the participation rate was 80.1%. Students with a previous diagnosis of mental disorders and <18 years of age were excluded.

Data Collection Tools: The Descriptive Data Form; Depression, Anxiety, and Stress Scale-21 (DAS 21); Health Education Students' Attitude Scale toward COVID-19 Outbreak, and Intolerance of Uncertainty Scale-12 were used as data collection tools.

The Descriptive Data Form: This questionnaire consists of questions to determine the sociodemographic and familial characteristics of students, their smoking habits, their compliance with the COVID-19 protection measures recommended during the pandemic, and the risk of infection. This questionnaire was created by the researchers.

DASS 21: A 21-item short form developed by Lovibond and Lovibond was used. The scale was developed to measure symptoms of depression, anxiety, and stress according to both clinical and normal samples. There are seven items for each factor. The scale has a 5-point Likert-type response format, and the lowest score to be obtained from each dimension is 7, while the highest score is 35. High scores on the scale indicate an increase in symptoms. In the original study, the internal consistency coefficients for the subfactors of the scale were found to be 0.94 for depression, 0.87 for anxiety, and 0.91 for stress (Lovibond & Lovibond 1995). In the Turkish adaptation of the scale conducted by Sarıçam, the internal consistency coefficients of the scale were determined to be 0.87 for depression, 0.85 for anxiety, and 0.81 for stress (Sarıçam 2018). The cutoff points for depression, anxiety, and stress levels according to the scores obtained are presented in Table 1 (Carleton et al. 2007).

Table 1. The cut-off points for Depression, Anxiety, and Stress Scale-21

	Depression	Anxiety	Stress
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Extremely severe	28+	20+	34+

Health Education Students' Attitude Scale towards COVID-19 Outbreak: The scale was developed in Turkish by Arslan and Filiz in 2020, and a study of its validity and reliability was conducted (Arslan & Filiz 2020). The original scale study was conducted in 911 students studying in the field of health. As a result of factor analysis from the 36-item data collection tool, a 20-item scale consisting of five factors was developed. Considering the expressions in the factors, factor 1 includes items about perceptions of what the state does in the prevention of the pandemic, factor 2 covers items related to concern about the virus, factor 3 includes items regarding perspectives toward the media, factor 4 involves items about personal knowledge and precautions, and factor 5 includes items of overview of the spread of the virus. This scale

is a five-point Likert-type (1 = never agree, 5 = always agree). The Cronbach's alpha value for the reliability of the scale was found to be 0.84. The Cronbach's alpha value calculated for the factors was 0.886 for factor 1, 0.760 for factor 2, 0.827 for factor 3, 0.688 for factor 4 and 0.673 for factor 5, indicating that the scale was valid and reliable (Arslan & Filiz 2020). Scale factors do not have a cutoff point and are evaluated according to the scores obtained.

IUS-12: The scale was developed by Carleton et al. in 2007 (Carleton et al. 2007). It is a self-report scale consisting of 12 items in total. The scale is a five-point Likert-type and its responses range between 1-5 (1- Not at all characteristics of me, 5- Entirely characteristic of me). The scale is scored by summing the values corresponding to the answers. The total score that can be obtained from the scale is a minimum of 12 and a maximum of 60. High scores indicate that the individual is intolerant of uncertainty. The scale also has two subdimensions. The first seven questions include the dimension of "prospective anxiety," while the others cover the dimension of "inhibitory anxiety". The Turkish validity and reliability study was conducted by Sarıçam et al. The Cronbach's alpha coefficient of the total scale score was found to be 0.88. Furthermore, the Cronbach's alpha coefficient of the scale was found to be 0.84 for the prospective anxiety subdimension and 0.77 for the inhibitory anxiety subdimension (Sarıçam et al 2014).

Data Collection: As students continued their education online due to COVID-19, the data was collected via Google Forms. Students completed the questionnaire between January 29 and April 5, 2021. Data were collected during the third wave, a period in which the number of new cases and deaths due to COVID-19 started to increase rapidly in Turkey (Republic of Turkey Ministry of Health 2021).

Research Ethics

This study was conducted in accordance with the principles of the Declaration of Helsinki of the World Medical Association. Ethical approval was obtained from the Sakarya University Medical Faculty Clinical Research Ethics Committee (Date: 29.01.2021, no: 31). Written consent was obtained online from all participants before answering the questions. Google Forms has privacy principles such as protecting and not sharing data and never selling personal information to anyone. In our study, the questionnaires were filled anonymously; no personal information (such as name, surname, ID number etc.) was requested.

Statistical Analyses

Statistical analysis was performed using IBM SPSS Statistics for Windows, version 24.0. Descriptive data were presented as mean ± standard deviation, number, and percentage. Kolmogorov-Smirnov normality tests were used to determine whether the data showed a normal distribution. As the data showed a normal distribution, parametric tests were used in the analysis. The relationship between the subdimensions of the Health Education Students' Attitude Scale towards COVID-19 Outbreak Scale and the total and subdimension scores of the IUS-12 scale with the depression, anxiety, and stress scores was evaluated with Pearson correlation analysis. The relationship between students' sociodemographic characteristics, smoking habits, health perception, familial characteristics, and compliance with COVID-19 prevention measures with depression, anxiety, and stress was analyzed using independent Sample's t-test and one-way ANOVA. The Bonferroni test, one of the post hoc analysis methods, was used when there was a significant difference between the analysis of variance and the group means. Multiple regression analysis was used to determine the factors affecting student depression, anxiety, and stress levels. Variables found to be significant in bivariate analyses were included in the regression analysis. The statistical significance was accepted as $p<0.05$.

RESULTS

The mean age of the students was 20.1±1.9. The mean depression score of the study group was 10.0 ± 4.9, the mean anxiety score was 5.9±4.6, and the mean stress score was 9.4±5.1. 23.2% of the students had mild, 21.6% had moderate, and 2.8% had severe depression. 9.4% of the students had mild anxiety, 16.3% had moderate anxiety, and 5.1% had severe anxiety. 12.5% of the students had mild stress and 5.5% had moderate stress (Table 2).

Table 2. Prevalence of depression, anxiety and stress

	Depression n (%)	Anxiety n (%)	Stress n (%)
Normal	593 (52.4)	784 (69.3)	929 (82.1)
Mild	263 (23.2)	106 (9.4)	141 (12.5)
Moderate	244 (21.6)	184 (16.3)	62 (5.5)
Severe	32 (2.8)	58 (5.1)	-

The mean depression, anxiety, and stress scores of the female students were higher than those of the male students

(p<0.05). The mean depression, anxiety, and stress scores of students who lived in a city were higher than those of those who lived in the village (p<0.05). While the depression, anxiety and stress scores of those with moderate health perception were significantly higher than those with good health perception, it was found to be lower than those with poor health perception (p<0.001). The mean of all three scores of those with poor health perceptions was significantly higher than those with good and moderate health perceptions (p<0.001). The mean depression, anxiety, and stress scores of smokers were higher than those of nonsmokers (p<0.001). Mean anxiety and stress scores for students with working mothers were higher than those with unemployed mothers (p<0.05). The depression, anxiety and stress scores of the students whose families had moderate income were higher than those of the high ones, while lower than those of the low ones (p<0.001). The mean of all three scores of the students with a low income were higher than those of the high and moderate ones (p<0.001, Table 3).

Table 3. The relationship between some sociodemographic characteristics with depression, anxiety, and stress

Characteristic	n (%)	Depression Mean±SD	p	Anxiety Mean±SD	p	Stress Mean±SD	p
Age*							
≤19 age	455 (40.2)	10.2±4.9	0.241	5.8±4.6	0.639	9.7±5.1	0.166
≥20 age	677 (59.8)	9.8±4.9		6.0±4.5		9.2±5.1	
Gender*							
Male	253 (22.3)	9.4±4.8	**0.044**	4.7±3.6	**<0.001**	8.2±4.6	**<0.001**
Female	879 (77.7)	10.1±4.9		6.3±4.7		9.8±5.2	
Place of residence#							
City	547 (48.3)	10.4±5.0‡		6.3±4.8‡		9.9±5.2‡	
Town	371 (32.8)	9.7±4.6	**0.029**	5.6±4.4	**0.018**	9.0±4.9	**0.017**
Village	214 (18.9)	9.4±4.9		5.4±4.2		8.9±5.1	
Perception of health#							
Good	837 (73.9)	9.3±4.7		5.2±4.2		8.7±4.9	
Moderate	260 (23.0)	11.2±4.9‡	**<0.001**	7.5±4.8‡	**<0.001**	11.0±5.3‡	**<0.001**
Bad	35 (3.1)	15.6±5.1‡‡		10.7±4.2‡‡		13.5±5.4‡‡	
Smoking*							
Smoker	307 (27.1)	11.1±5.1	**<0.001**	6.8±5.0	**<0.001**	10.7±5.1	**<0.001**
Nonsmoker	825 (72.9)	9.53±4.75		5.6±4.3		8.9±5.0	
Employment status of the father#							
Unemployed	130 (11.5)	10.1±5.1		5.9±4.1		9.5±5.1	
Retired	287 (25.4)	10.2±4.9	0.512	5.8±4.7	0.811	9.6±5,2	0.748
Employed	715 (63.2)	9.8±4.8		6.0±4.6		9.3±5.1	
Employment status of the mother*							
Unemployed/ housewife	852 (75.3)	9.8±4.8	**0.024**	5.9±45	**0.045**	9.2±5.1	**0.027**
Employed	280 (24.7)	10.5±4.9		6.7±4.8		10.0±5.1	
Family income#							
High	146 (12.9)	8.3±5.0		4.8±4.6		7.9±5.2	
Moderate	844 (74.6)	9.9±4.7†	**<0.001**	5.9±4.5†	**<0.001**	9.4±4.9†	**<0.001**
Low	142 (12.5)	11.9±5.0††		7.4±4.5††		11.3±5.3††	

n: number, SD: Standard Deviation, * Independent Samples T-Test, #Analysis of Variance
‡ It is significantly higher than those living in the village (p<0.05).
‡ It is significantly higher than those with good health perception (p<0.001).
‡‡Health perception is significantly higher than good and moderate ones (p<0.001).
† It is significantly higher than those with good economic status (p<0.001).
†† It is significantly higher than those with good and moderate economic status (p<0.001).

The mean anxiety and stress scores of the students who were diagnosed with COVID-19, who were quarantined due to suspicious contact, and who had an acquaintance or relative positive for COVID-19 around were higher than those of the other students (p<0.05). The mean anxiety score of the students who constantly wear masks while leaving the house was higher than that of those who did not wear masks (p<0.05). The mean depression, anxiety, and stress scores of the students who stated that the surrounding people did not wear masks, who did not receive quality and enough sleep and who did not have an adequate and balanced diet were higher than those of the other students (p<0.01, Table 4).

Table 4. The relationship between depression, anxiety, and stress with students' compliance with COVID-19 prevention measures

COVID-19 prevention	n (%)	Depression Mean±SD	p*	Anxiety Mean±SD	p*	Stress Mean±SD	p*
Have you been diagnosed with COVID-19?							
Yes	109(9.6)	10.7±4.5	0.115	7.5±4.9	**<0.001**	10.5±5.0	**0.017**
No	1023(90.4)	9.8±4.9		5.7±4.5		9.3±5.1	
Have you been quarantined as a result of suspected contact?							
Yes	250(22.1)	10.4±4.9	0.154	6.8±5.0	**0.001**	10.2±5.0	**0.007**
No	882(1132)	9.8±4.9		5.7±4.4		9.2±5.1	
Has anyone around you tested positive for COVID-19?							
Yes	735(64.9)	10.1±4.9	0.396	6.3±4.7	**<0.001**	9.7±5.1	**0.010**
No	397(35.1)	9.8±4.8		5.2±4.2		8.8±5.0	
I never go to crowded areas							
Yes	519(45.8)	9.9±5.1	0.859	5.7±4.6	0.140	9.1±5.2	0.054
No	613(54.2)	9.9±4.7		6.1±4.5		9.7±5.1	
I do not use public transport							
Yes	554(48.9)	9.8±5.0	0.319	5.6±4.5	0.119	9.1±5.1	0.140
No	578(51.1)	10.1±4.7		6.4±4.5		9.7±5.0	
Do you follow the "stay at home" practice to protect yourself from COVID-19?							
Yes	985(87.0)	9.9±4.9	0.804	5.9±4.5	0.464	9.4±5.1	0.389
No	147(13.0)	9.9±4.8		5.7±4.4		9.8±5.0	
Do you pay attention to social distancing rules?							
Yes	1098(97.0)	9.9±4.8	0.335	5.9±4.6	0.749	9.4±5.1	0.637
No	34(3.0)	10.8±5.5		6.2±4.5		9.8±5.5	
Do you always wear a mask when going out?							
Yes	1115(98.5)	9.9±4.9	0.244	5.9±4.6	0.136	9.5±5.1	**0.040**
No	17(1.5)	8.6±5.2		4.3±3.7		6.8±4.0	
Do the people around you comply with the mask usage rules?							
Yes	867(76.6)	9.6±4.8	<0.001	5.7±4.6	**0.003**	9.1±5.1	**<0.001**
No	265(23.4)	10.9±5.0		6.7±4.4		10.6±5.1	
Would you like to have the COVID-19 vaccine?							
Yes	648(57.2)	9.9±4.9	0.796	5.9±4.6	0.605	9.5±5.2	0.673
No	484(42.8)	10.0±4.9		5.8±4.4		9.3±5.0	
Are you getting enough and quality sleep?							
Yes	464(41.0)	8.1±4.5	<0.001	4.5±3.9	**<0.001**	7.7±4.8	**<0.001**
No	668(59.0)	11.2±4.7		6.9±4.7		10.6±4.9	
Are you eating an adequate and balanced diet?							
Yes	647(57.2)	8.6±4.6	<0.001	4.9±4.2	**<0.001**	8.2±4.8	**<0.001**
No	485(42.8)	11.7±4.7		7.2±4.7		11.0±5.0	

n: number, SD: Standard Deviation, * Independent Samples T-Test,

A negative and weak correlation was found between the depression, anxiety, and stress scores of students with the factor 1 subdimension of the Health Education Students' Attitude Scale towards the COVID-19 outbreak, while a positive and weak correlation was found with the factor 2 and factor 5 subdimensions ($p<0.001$). The depression, anxiety, and stress scores increased as perception of the state's efforts to prevent the outbreak decreased. The depression, anxiety, and stress scores of the students were found to increase as the anxiety about the virus and the belief about the emergence of the virus (the belief that the virus was deliberately created and spread) increased ($p<0.001$). There was a moderate positive correlation between the total IUS-12 score of the students and the prospective and inhibitory anxiety scores with the depression, anxiety, and stress scores ($p<0.001$, Table 5).

The evaluation of the factors affecting students' depression, anxiety, and stress by multiple regression analysis is presented in Table 6. Students' smoking habits, prospective anxiety, inhibitory anxiety, their perception of state actions to prevent the pandemic, their concern about the virus, and the belief that the virus was spread intentionally significantly affected the level of depression, anxiety, and stress ($p<0.05$). The place where the students lived in childhood and the presence of COVID-19 positive acquaintances around had a significant effect on the anxiety level of the students ($p<0.05$, Table 6).

DISCUSSION

In our study, students' smoking habits, high intolerance to uncertainty, negative perception of the measures taken to prevent the pandemic, the presence of concern about the virus, and the negative view of the intentional spread of the virus affected the level of depression, anxiety, and stress. The presence of people positive for COVID-19 affected the anxiety level of the students.

In a recent systematic review, smokers were shown to be twice as likely to have severe COVID-19-related illness as nonsmokers (Radwan et al. 2019). In our study, the depression, anxiety, and stress scores of smokers were higher than those of nonsmokers. In a study conducted in India during the pre-pandemic period, the depression, anxiety, and stress scores of nonsmokers were found to be higher (Iqbal et al. 2015). Depression, anxiety, and stress symptoms were determined to be more common in smokers during the COVID-19 pandemic (Islam et al. 2021, Stanton et al. 2021). The risk of death from COVID-19 was shown to increase up to seven times in smokers (Abohamr et al. 2020). Despite long-term efforts to combat smoking, limited media attention is paid to smoking cessation programs or the adverse risks associated with smoking. However, the announcement of smoking as a risk factor for COVID-19 disease in the media may have caused students to experience fear and panic. Health promotion efforts are needed to educate the public about the risks of smoking during the COVID-19 pandemic.

Table 5. The relationship between students' attitudes towards the COVID-19 and intolerance to uncertainty with depression, anxiety, and stress#

	Factors	Mean±SD	Depression	Anxiety	Stress
Attitude Scale towards COVID-19 Outbreak	Factor 1: State actions in the prevention of the pandemic	18.7±5.2	-.297*	-.214*	-.263*
	Factor 2: Concern about the virus	16.2±2.9	.275*	.345*	.338*
	Factor 3: Perspective towards the media	4.8±2.3	.082	.026	.023
	Factor 4: Personal knowledge and precaution	17.6±1.8	-.053	-.041	-.010
	Factor 5: Overview of the emergence of the virus	8.2±2.5	.151*	.147*	.102*
Intolerance of Uncertainty Scale-12	Prospective anxiety	24.2±5.4	.423*	.472*	.498*
	Inhibitory anxiety	16.6±5.3	.478*	.472*	.516*
	Total IUS-12 score	40.8±9.7	.496*	.495*	.559*

SD: Standard Deviation, IUS-12: Intolerance of Uncertainty Scale-12
Pearson correlation analysis; *p<0.001

Table 6. Multiple Regression model analysis with variables affecting depression, anxiety, and stress

Characteristics (n=1132)	**Depression β (95%CI)**	**Anxiety β (95%CI)**	**Stress β (95%CI)**
Gender	0.04 (0.88, -0.55)	0.97 (0.41, 1.53)	0.90 (0.30, 1.50)
Place of residence	-0.28 (-0.59, 0.02)	**-0.31 (-0.56, -0.02)***	-0.30 (-0.61, 1.01)
Perception of health	1.16 (0.70, 1.63)	1.48 (0.98, 1.91)	1.00 (0.54, 1.47)
Smoking	**-1.22 (-1.77, -0.68)*****	**-1.06 (-1.56, -0.55)*****	**-1.52 (-2.06, 0.98)*****
Mother's employment status	0.34 (-0.20, 0.89)	0.06 (-0.44, 0.57)	0.20 (-0.34, 0.75)
Family income	0.68 (0.18, 1.16)	0.18 (-0.26, 1.02)	0.46 (-0.02, 1.01)
Prospective anxiety	**0.13 (0.07, 0.18)*****	**0.13 (0.08, 0.18)*****	**0.22 (0.16, 0.28)*****
Inhibitory anxiety	**0.28 (0.22, 0.34)*****	**0.21 (0.16, 0.27)*****	**0.26 (0.20, 0.32)*****
Factor 1	**-0.15 (-0.20, -0.10)*****	**-0.06 (-0.11, -0.02)****	**-0.12 (-0.17, -0.07)*****
Factor 2	**0.16 (0.08, 0.25)*****	**0.25 (0.17, 0.33)*****	**0.24 (0.16, 0.33)*****
Factor 5	**0.11 (0.01, 0.20)***	**0.12 (0.03, 0.21)****	**0.13 (0.08, 0.16)****
COVID-19 diagnosis	0.34 (-0.46, 1.14)	-0.47 (-1.21, 0.26)	0.24 (-0.56, 1.04)
Presence of an acquaintance who are positive for COVID-19	0.31 (-0.18, 0.80)	**-0.56 (-1.01, -0.10)***	-0.18 (-0.68-1.00)
Mask use of the people around	0.29 (-0.28, 0.86)	0.08 (-0.44, 0.61)	0.53 (-0.03, 1.10)
	R=0.59 R^2=0.35***	R=0.60 R^2=0.36***	R=0.64 R^2=0.41***

β: Regression coefficient, 95%CI: Confidence Interval $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$
Factor 1: Actions of the state in the prevention of the pandemic; Factor 2: Concern about the virus; Factor 5: Overview of the emergence of the virus

In our study, we found that in multiple regression analysis, we found a relationship between living in a city and anxiety. Although there are studies that indicate a relationship between the student's place of residence and their mental well-being during the COVID-19 pandemic (Hyland et al. 2020, Islam et al. 2020, Zhou et al. 2020), there are also studies that assert the opposite (Aslan et al. 2020, Xiao et al. 2020). The mental health of students living in provinces may have been more affected due to the risk of contamination and social isolation as a result of bans and contact with crowded environments. In the study by Wathelet et al., not living with their families, having a weak sense of integration, and having low quality social relationships were associated with mental health problems of university students (Wathelet et al.2020). In a systematic review examining the impact of the COVID-19 pandemic on the mental health of the community, living in urban areas were listed among the predictive factors of depressive symptoms (Xiong et al. 2020). Crowded areas pose a greater risk of droplet-borne COVID-19. Such viruses can be transmitted more easily in urban and central areas where the human population is more concentrated. Most cases of COVID-19 in Turkey are in urban areas (Republic of Turkey Ministry of Health 2021). For this reason, it can be expected that students living in urban areas will have greater anxiety.

In our study, we found that the mean anxiety scores of the students who stated that the surrounding people were positive for COVID-19 were higher. Studies conducted during the COVID-19 pandemic reported a correlation between depression and anxiety symptoms (Stanton et al. 2020, Xiong et al. 2020). The presence of an acquaintance infected with COVID-19 in the immediate environment is one of the predictive factors of depression (Ghazawy et al. 2020, Hyland et al. 2020, Xiong et al. 2020). In a study with participants from different countries during self-quarantine/isolation in the first months of the pandemic, depression, anxiety, and stress levels of individuals were found to increase. In this period, the positivity of COVID-19 in the immediate environment negatively affected the mental health of individuals, as family support is a significant factor in coping with mental health problems (Shah et al. 2021). In a study conducted in Poland immediately after the onset of the pandemic, there was a significant increase in the levels of depression of students as the pandemic progressed and the number of COVID-19

positive patients increased (Debowska et al. 2020). A nationwide study in France found that suicidal thoughts, severe distress, depression, anxiety and stress were higher among quarantined university students. Among the identified risk factors, the presence of symptoms of COVID-19 in people around them and themselves and the lack of adequate knowledge of the disease were associated with all mental health problems (Wathelet et al. 2020).

Uncertainty and isolation have been linked to many mental health problems (Shah et al. 2021). In our study, we found that students who have prospective anxiety and inhibitory anxiety, which are among the IUS-12 subscales, increased their levels of depression, anxiety, and stress. In the literature, a positive relationship was found between intolerance for uncertainty with depression, anxiety, and stress in individuals over 18 years of age (Bakioğlu et al. 2020, Fedorenko et al. 2021, Zhuo et al. 2021). It is suggested that eliminating uncertainty about fear of COVID-19 will contribute to the reduction of depression, anxiety, and stress (Bakioğlu et al. 2020). During the COVID-19 pandemic, the freedom and social life of individuals, in addition to their daily activities, were significantly affected (Duman 2020, Stanton et al. 2020, Xiong et al. 2020, Xiao et al. 2020). Students as well as other people have been economically affected by the pandemic. The sudden introduction of remote learning caused such problems and ongoing uncertainty appeared to be the most powerful stress inducer among university students (Kaya et al. 2021). The quarantine period of COVID-19 prevented Lebanese university students from learning, leading to stressful workloads that began to cause anxiety and depressive symptoms among students (Fawaz & Samaha 2021). The onset of the pandemic has caused a high uncertainty about academic life (form of education, inability to complete education or graduate) among students (Aslan et al. 2020). It is stated that during the pandemic period, prospective anxiety of students may also arise due to the fear of COVID-19 (Duman 2020).

In our study, we found that the depression, anxiety, and stress scores were high in students who perceived the actions implemented by the government to prevent the COVID-19 pandemic as insufficient. Mental health of those who perceived the measures taken against the virus as inadequate was more affected (Xiong et al. 2020). Fear of being infected by the virus was greater among university students in Turkey who lost their friends due to COVID-19, and their mental health was adversely affected (Duman 2020). In a study conducted with medical students in China, depression and anxiety disorders were found in those with a negative perception of the measures taken against the virus (Xiao et al. 2020). Those who thought that the measures taken by the state were inadequate during the pandemic may have led to feeling insecure and anxious about getting sick and dying.

We found that students with COVID-19 anxiety had high depression, anxiety, and stress scores. In the literature, the 18-24 age group has been shown to have higher levels of depression, anxiety, and stress during the pandemic period, and there is a relationship between the quarantine period and depression, anxiety, and stress levels (Ghazawy et al. 2020, Hyland et al. 2020, Shah et al. 2021). In a study conducted with students in Turkey, a positive relationship was found between the negative perception of the impact of COVID-19 on stress and anxiety. That is, students who negatively perceived the impact of COVID-19 on well-being were more stressed and anxious (Aslan et al. 2020). In a study, the intolerance of uncertainty, depression, anxiety, and stress were shown to have a mediating role in the relationship between fear of COVID-19 and positivity (Bakioğlu et al. 2020). In another study, a negative relationship was found between fear of COVID-19 and mental well-being (Satici et al. 2020). It is predicted that increasing students' knowledge of the prevention of COVID-19 can reduce students' anxiety and depression levels (Zhou et al. 2020). Students in Wuhan, China, were reported to adhere to social isolation and cleaning rules more than those living in Beijing (Xiao et al. 2020). As fear of COVID-19 viral contamination and social distancing increased in students, so did symptoms of depression, anxiety, and stress (Fedorenko et al. 2021).

Another significant result of our study was that students who thought the virus was intentionally spreading had higher levels of depression, anxiety, and stress. In a systematic review examining the impact of the COVID-19 pandemic on mental health, factors such as exposure to COVID-19 related news, greater perceived vulnerability, and lower self-efficacy to protect themselves were found to be associated with depression symptoms (Xiong et al. 2020). In the post-COVID-19 period in China, a relationship was determined between depression and anxiety with students' anxiety about whether the COVID-19 pandemic in China would recur. Taking precautionary measures to prevent the spread of the virus in China reduced levels of anxiety and depression of students (Zhou et al. 2020).

The main limitation of this study is that it is not strong enough to determine the absolute cause-effect relationship between depression, anxiety, and stress levels, as it is a cross-sectional study. Data was collected on the basis of self-reports from students. Since the variables that reflect the emotional state, such as depression, anxiety, stress, intolerance to uncertainty, and virus anxiety, which are the research variables, can change according to time and conditions, the results only reflect the situation when the data are collected. This research can also

be defined as a "status determination study" to determine the prevalence of depression, anxiety, and stress during the third wave, approximately one year after the onset of the pandemic in health tech students. The results of the research are guiding in terms of seeking solutions to the identified problems in the continuation of the students' education.

CONCLUSIONS

As a result, smoking, high intolerance to uncertainty, negative perception of the measures taken to prevent the pandemic, the presence of concern about the virus, and the belief in intentional spread of the virus affect the level of depression, anxiety, and stress. The presence of an acquaintance infected with COVID-19 in the immediate environment affects the level of anxiety of students. In addition to the changes created by the pandemic in the economy, education, and social life, its effects on the psychology of individuals will be a serious problem in the future. Considering these results, it may be beneficial to develop online psychoeducation and psychotherapy programs and to direct young people to these platforms during the COVID-19 social isolation process. It is suggested that virus protection training be carried out continuously. It is also recommended that more measures, including counseling services, are implemented to protect the psychological health of students.

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