

Factors Associated with Acute Stress Among Undergraduate and Graduate Students after the First Month of the Covid-19 Pandemic: Anxiety Sensitivity, Fear of Covid-19, Sex

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Abstract

As with any life-threatening event, the Covid-19 outbreak causes people to have emotional reactions such as fear and anxiety. Understanding people's emotional responses to the pandemic is important to understand mental health results. This study investigated the relationships between the levels of acute stress disorder symptoms, anxiety sensitivity, and fear of coronavirus. Data for this aim was collected from university students between the ages of 18 and 55 through an online research form. Data was collected between 23 April 2020 and 29 May 2020. Analysis of 739 participants showed that 67.9% of the participants had symptoms of acute stress ranging from moderate to extreme. It was also observed that anxiety sensitivity, fear of coronavirus, and sex explained 31.0% of the variance in acute stress symptom levels. Also, it was observed that the fear of coronavirus was higher in women than in men. The results point out that support systems that aid psychological well-being such as accessible online psychological help, and online social support groups have great importance during and after the pandemic. It has been thought that it may be beneficial to develop intervention programs targeting anxiety sensitivity to prevent trauma symptoms.

Keywords: Covid-19; pandemic; anxiety, acute stress; fear; anxiety sensitivity; fear of coronavirus

Covid-19 Pandemisinin İlk Ayı Sonrası Lisans ve Lisansüstü Öğrencilerde Akut Stresle İlişkili Faktörler: Kaygı Duyarlılığı, Covid-19 Korkusu, Cinsiyet

Öz

Hayatı tehdit eden her olayda olduğu gibi Covid-19 pandemisi de insanlarda korku ve endişe gibi duygusal tepkiler oluşmasına neden olmuştur. İnsanların salgına karşı duygusal tepkilerini anlamak, ruh sağlığı sonuçlarını anlamak için önemlidir. Bu çalışmada, akut stres bozukluğu belirtileri, kaygı duyarlılığı ve koronavirüs korkusu arasındaki ilişkileri araştırılmaktadır. Bu amaca yönelik veriler, 18-55 yaş arası üniversite öğrencilerinden çevrimiçi araştırma formu aracılığıyla toplanmıştır. Veriler 23 Nisan 2020 ile 29 Mayıs 2020 arasında toplanmıştır. Toplamda 739 katılımcıdan elde edilen verilerin analizi sonucunda, katılımcıların %67,9'unun orta ile aşırı düzey arasında değişen akut stres belirtilerine sahip olduğu görülmüştür. Anksiyete duyarlılığı, koronavirüs korkusu ve cinsiyetin akut stres belirti düzeylerindeki varyansın %31,0'ini açıkladığı görülmüştür. Ayrıca kadınlarda koronavirüs korkusunun

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erkekler için daha yüksek olduğu gözlemlenmiştir. Sonuçlar, çevrimiçi psikolojik yardım ve çevrimiçi sosyal destek grupları gibi psikolojik iyi oluşa yardımcı olan destek sistemlerinin pandemi sırasında ve sonrasında büyük önem taşıdığına işaret etmektedir. Travma belirtilerinin önlenmesi için kaygı duyarlılığını hedef alan müdahale programlarının geliştirilmesinin faydalı olabileceği düşünülmüştür.

Anahtar Kelimeler:; pandemi; kaygı, akut stres; korku; kaygı duyarlılığı; koronavirüs korkusu

1. Introduction

The novel coronavirus (Covid-19) first emerged in Wuhan, China, and spread to 216 countries in a short time (World Health Organisation, 2020). As the coronavirus showed high transmission and mortality rates, the number of people infected in different countries increased rapidly. The World Health Organization (WHO) declared a pandemic on 11th March 2020. While scientists put great effort into finding effective treatments and vaccines, governments started taking several precautions to decrease the transmission rate. Most countries closed their borders and imposed lockdowns. These unexpected restrictions and changes in daily routines for an indefinite time, together with the rapid spread of the virus can lead to serious mental health problems. The global prevalence study revealed that depression and anxiety disorder prevalence increased by approximately one-fourth in 2020 (COVID-19 Mental Disorders Collaborators, 2021). Although it is not known how Covid pandemic affects the prevalence of other mental disorders, studies conducted on other pandemics like SARS found that quarantines and illness can also cause trauma and stress-related disorders (Sood, 2020). For that reason, this paper aims to understand the acute traumatic stress symptoms and their relationship with anxiety sensitivity, fear of Covid-19, and sex during the pandemic period.

Acute Stress Disorder (ASD) refers to a specific group of symptoms that appear within 2 to 28 days of a traumatic experience and these symptoms are like Post-Traumatic Stress Disorder (PTSD) (Bryan et al., 1998). Diagnosis of ASD was included in the DSM-IV (American Psychiatric Association, 1994) to identify traumatized people prone to developing PTSD. It is stated that after experiencing a traumatic event, approximately half of those who develop ASD have converted to PTSD (APA, 2020) and one meta-analysis showed that over 50% of individuals diagnosed with ASD developed chronic PTSD within 6 months of the trauma (Zhou et al., 2015). Therefore, the detection of which variables related to acute stress during the Covid-19 pandemic can help us to understand the etiology of ASD and help clinicians and mental health professionals to prevent PTSD. A study conducted in China, where the coronavirus was first seen shows Covid-19 related stress is directly related to acute stress disorder symptoms (Ye et al., 2020). Anxiety sensitivity could be defined as a trait-like tendency that describes individuals' misinterpretation of autonomic sensations as dangerous (Reiss et al., 1986). Studies found that anxiety sensitivity and traumatic stress symptoms are closely related to each other. It has been suggested that anxiety sensitivity may modulate an individual's physiological response to acute stress responses (Wearne et al., 2019) and individuals with higher anxiety sensitivity could be more prone to experience traumatic stress after traumatic events (Marshall et al. 2010). To support this, research results related to other outbreaks showed increased anxiety levels and traumatic stress symptoms in people (Wheaton et al., 2012). During the Covid-19 pandemic, researchers also found that acute stress reaction scores showed a positive relationship with anxiety scores (Xiao et al. 2020).

Fear is defined as an unpleasant emotional state caused by a perceived threat (Doctor et al. 2008). As the novel coronavirus threatens physical health, people who believe they are at risk of being infected show a higher degree of fear (Ahorsu et al., 2020). In this sense, the degree of fear is detrimental. When there is a balance between an actual threat and an emotional

response, it is called functional fear. Otherwise, it is called maladaptive fear where the level of fear is too high or low concerning the actual threat (Mertens et al. 2020). Researchers revealed that functional fear enhances people to compliance with health behaviors (Harper et al., 2020) whereas maladaptive fear can lead to mental health problems and lower life satisfaction (Satici et al. 2020). Fear caused by crises like terrorism, economic crisis, and migration can also lead to trauma disorders, anxiety, and depression (Giorgi et al. 2014; Nickerson et al. 2010; Palmer, 2007). Piqueras et al. (2021) found that fear of COVID-19 is a predictor of acute stress disorder.

Acute Stress Disorder has been found to cause subsequent psychological distress, such as depression, anxiety, and somatization in individuals exposed to trauma (Benight and Harper, 2002), and seems important to have a thorough knowledge of how to predict who will be resilient in the acute phase (Bryant, 2021). For that reason, this study focuses on acute stress responses and related variables in the first months of the Covid-19 pandemic.

2. Method

2.1. Sample

A total of 766 undergraduate and graduate students studying in 9 different universities in Turkey participated in the study. All the universities that participated in the study are in Istanbul/Turkey. The inclusion criteria for participants were only age and educational status. Participants who were above 18 and students in university were included in the sample, other participants were excluded as they were not eligible for the sample. One participant left more than 70% of the questions empty, one participant aged 83, and 25 participants showed response bias were removed from the data. Data from 739 people; 504 of whom were women (68.2%), and 235 of whom were men (31.8%) were analyzed. The participants' ages ranged between 18 and 55 ($M = 23.5$, $SD = 6.2$). 675 of the participants were single (91.3%), and 61 of them were married (8.3%) (3 missing). 656 of the participants were undergraduate students (88.8%); 83 (11.2%) were graduate/doctorate students (1 missing).

2.2. Procedure

The ethical approval of this study has been granted by the Ethics Committee of Beykoz University with decision number 2 at the meeting numbered 2020/4.

As of March 16, education was interrupted in Turkey because of the Covid-19 pandemic; on March 23, it was continued through online platforms. For this reason, after the university's ethics committee's approval, the questionnaire prepared by the researchers was put into an online format using the Google Documents infrastructure. Questionnaires were sent to undergraduate and graduate students who were taking the courses of academicians working in 9 different universities, including researchers, through the online education platform. Students participated in the research by accessing the research link on the announcement. Participation was voluntary. Before answering the questions, the participants were asked to approve the consent form including information, containing the purpose and content of the research and the contact information of the researchers. Participants answered the questionnaire anonymously so that no personal data was gathered. It took approximately 15 minutes to answer the questions. Data was collected between 23 April 2020 and 29 May 2020.

2.3. Measurement Tools

The questionnaire used in this survey consisted of a demographics form, Severity of Acute Stress Symptoms – Adult, Anxiety Sensitivity Index – Revised, and Fear of Covid-19 Scale. The demographic form included questions regarding sex (1=Female, 2=Male), year of birth, city of residence, educational status, and marital status.

2.3.1. The Severity of Acute Stress Symptoms—Adult (National Stressful Events Survey Acute Stress Disorder Short Scale [NSESSS])

The 7-item scale was published by the American Psychiatry Association (2013) to assess acute stress symptom severity according to DSM-5. Each item is rated on a 5-point Likert scale (0=Not at all, 1= A little bit, 2=Moderately, 3=Quite a bit, 4=Extremely). Participants were asked to rate the severity of acute stress symptoms during the past 7 days. The APA suggests using the average total score for clinicians to help understand the severity of the symptom levels. Average total scores are calculated by dividing raw total scores by seven (number of items). The scores are interpreted as follows: (0) no acute stress symptoms, (1) mild acute stress symptoms, (2) moderate acute stress symptoms, (3) severe acute stress symptoms, and (4) extreme acute stress symptoms.

The scale was adapted to the Turkish language by Aşçıbaşı et al. (2017). They reported the internal consistency of the scale as .95 in a sample of both clinical and healthy subjects. In this study, Cronbach's alpha coefficient was calculated as .79.

2.3.2. Anxiety Sensitivity Index-Revised (ASI-R)

ASI-R is an extended version of the 16-item Anxiety Sensitivity Index which was developed by Reiss, Peterson, Gursky, & McNally (1986). It was developed by Taylor and Cox (1998) to measure fear of anxiety and anxiety-related symptoms which are based on the belief that these bodily sensations and feelings can have negative psychological, physical, and social consequences. The scale consists of 36 items which are rated on a 5-point Likert scale (0=very little, ..., 4= very much). The scores ranged from 0 to 144 and increasing scores indicate increased anxiety sensitivity.

The scale's internal consistency was reported between .93 and .95 in different studies (Arnau, Broman-Fulks, Green & Berman, 2009; Deacon, Abramowitz, Woods, & Tolin, 2003; Taylor & Cox, 1998). The scale was adapted into Turkish by Durmuş-Sandler (2001), and they reported Cronbach's alpha coefficient as .94. In this study Cronbach's alpha coefficient was calculated as .96.

2.3.3. Fear of COVID-19 Scale

A 7-item scale was developed by Ahorsu, Lin, Imani, Saffari, Griffiths & Pakpour (2020) to measure the individual's fear of Covid-19. The items were rated on a 5-point Likert scale (1=strongly disagree, 2=disagree, 3=neither agree nor disagree, 4=agree, 5=strongly agree). The scores ranged from 7 to 35 and higher scores indicate a greater fear of Covid-19. Ahorsu et al. (2020) reported high internal consistency ($\alpha = .82$). The scale was adapted to Turkish by Satici, Gocet-Tekin, Deniz & Satici (2020). They reported Cronbach's alpha coefficient as .85. In this study, Cronbach's alpha coefficient was calculated as .86.

2.4. Statistics

The data were analyzed by using IBM SPSS v.25. Frequency analysis, mean, and standard deviation calculations were used for the sample properties. An independent sample t-test was used to compare anxiety sensitivity, fear of coronavirus, and acute stress scores by sex. Pearson correlation coefficient was calculated in the analysis of the relationships between variables. Linear multiple regression analysis was performed to determine the variables predicting the change in acute stress symptom levels. The scores obtained from the NSESS were the dependent variables in this analysis. Sex, fear of Covid-19 scores, and anxiety sensitivity scores were used as independent variables.

3. Results

Relationships between acute stress symptom levels, anxiety sensitivity, and fear of coronavirus were examined. The fear of COVID-19 and anxiety sensitivity showed a high positive relationship with acute stress symptom levels ($r = .48$; $r = .49$ respectively, $p < .001$). Fear of coronavirus also showed a high positive correlation with anxiety sensitivity ($r = .56$, $p < .001$). When the NSESSS scores of the participants were analyzed, it was seen that 39 of them had none, 198 of them were mild, 317 of them were moderated, and 185 of them had a severe or extreme level of acute stress symptoms. Briefly, 67.9% of the sample showed moderate to extreme levels of acute stress symptoms.

As a result of the analysis, it was seen that women's fear of coronavirus ($M = 17.47$, $SD = 6.17$) was higher than men's ($M = 15.04$, $SD = 6.27$) ($t = 4.95$, $p < .001$). The acute stress scores of women ($M = 14.09$, $SD = 5.72$) were significantly higher than men ($M = 11.82$, $SD = 6.09$) ($t = 4.89$, $p < .001$). Finally, anxiety sensitivity scores were compared according to sex. It was also observed that women's ASI-R scores ($M = 95.29$, $SD = 30.47$) were higher than men's ($M = 89.23$, $SD = 28.38$) ($t = 2.54$, $p < .001$).

Table 1 shows the regression analysis results in explaining variance in acute stress symptom levels during the COVID-19 pandemic. The regression model was statistically significant ($F_{3, 716} = 107.032$, $p < .001$) and explained 31.0% of the variance in acute stress symptoms. The results showed that anxiety sensitivity ($p < .001$), fear of COVID-19 ($p < .001$) and being a woman ($p < .01$) are significant explanatory variables of acute stress symptom levels during the coronavirus pandemic.

Table 1. Predictors of Acute Stress Symptom Level During Coronavirus Pandemic (N=739)

	R ²	B	t	β
	.31			
Sex		-1.153	-2.869	-.091
Fear of Coronavirus		.263	7.299	.277
Anxiety Sensitivity		.065	8.757	.328

4. Discussion

The changes in life during the pandemic can cause individuals to feel unsafe and anxious which can result in various mental health problems. The studies revealed that individuals can develop acute stress disorder, post-traumatic stress disorder, depression, insomnia, and anxiety during and after health-related disasters (Usher, Bhullar & Jackson, 2020). In this study, it was observed that two-thirds of the participants showed moderate to extreme levels of acute stress symptoms. Similarly, the study conducted with 7800 undergraduate and graduate students showed that 72.8% of the sample reported having moderate to high levels of acute stress symptoms (Lin et al., 2020). The high level of acute stress symptoms among university students is worrying because it is known to be one of the predictors of PTSD (Birmes et al., 2003; Brewin, Andrews, Rose & Kirk, 1999; Harvey & Bryant, 2000). Although the representativeness of a sample consisting only of university students is limited, high levels of ASD symptoms in this sample are important data for public mental health in the long term and may be useful to follow up to understand the long-term effects of the pandemic.

According to the results of the study, higher anxiety sensitivity is associated with an increase in the risk of developing acute stress symptoms. The results support the diathesis-stress model which suggests that some individual characteristics increase one's vulnerability to stress which can result in psychological disorders (Elwood, Hahn, Olatunji & Williams, 2009). Anxiety sensitivity is one of these individual characteristics and several studies reported that anxiety sensitivity levels are higher among individuals with acute stress or post-traumatic stress disorder (Asmundson & Carleton, 2005; Nixon & Bryant, 2005; Kilic, Kilic, & Yilmaz, 2008;

Lang et al., 2002). The highly positive relationship between fear of coronavirus and anxiety sensitivity also supports the idea that anxiety sensitivity predisposes an individual to fear and anxiety development (Reiss, Peterson, Gursky, & McNally, 1986). People who believe that anxiety has terrible effects may tend to have increased anxiety reactions to this expectation. It can be said that people who have higher anxiety sensitivity are more prone to have higher levels of coronavirus fear, stress, and anxiety. Both cross-sectional and longitudinal studies provide evidence that COVID distress and AS are related (Manning et al., 2021; Rogers et al., 2021; Schmidt et al., 2021). The longitudinal study conducted by Schmidt et al. (2021) showed that anxiety sensitivity occurs before continuing or later symptoms of pandemic-related distress, so it supports the notion that anxiety sensitivity can serve as a risk factor in the development of ASD symptoms. Fear of Covid-19 was another significant predictor of acute stress symptom levels. This result is consistent with the results of studies conducted in different countries during the Covid-19 pandemic (Tang et al., 2020; Casagrande, Favieri, Tambelli, & Forte, 2020). Fear is an adaptive defence mechanism, which is the basis for survival and arises in response to potentially threatening events. However, when fear becomes chronic or is disproportionate to the situation, it becomes harmful and may play a role in the development of various psychiatric disorders.

Being a woman was the third significant risk factor for acute stress symptom levels. At the same time, in this study, women's anxiety sensitivity and acute stress symptom levels were higher than men's. This finding is consistent with other findings in the literature (Liu et al., 2020; Casagrande et al., 2020; Mertens, et al., 2020). Interestingly, although the number of Covid positive cases across the globe is evenly distributed among women and men, and the mortality rate is higher in men (Wenham, Smith & Morgan, 2020), fear of coronavirus levels in women is also higher than in men. This gender-based difference can be explained by the neurological fear-processing difference between men and women (Olf, Langeland, Draijer, & Gersons, 2007). Felmingham et al. (2010) reported that women showed greater brainstem activation to a threat which can result in higher traumatic stress symptoms. The other possible explanation is that fluctuating levels of sex hormones increase the risk of women developing anxiety, trauma, and stress-related disorders (Li & Graham, 2017). On the other hand, gender role expectations could be effective in men's reporting of their fear and anxiety. However, the reason for this gender-based difference is still not very clear. Sex-sensitive research is required both on the negative health, social and economic impacts of the pandemic and on anxiety and stress responses.

Some strengths and limitations of this study can be noted. Among the strengths of the research, it can be said that this study was carried out in the first two months after the first case of coronavirus was detected in Turkey (March 11) and the World Health Organization declared the coronavirus pandemic. Although the data obtained from the study gives the possible acute stress prevalence among undergraduate and graduate students, the cross-sectional nature of the data limits the possibility of reaching conclusive statements. Longitudinal studies are needed for the prognosis of ASD following the outbreak. Another limitation of the study is that no clinical evaluation has been made for acute stress symptoms, and the information gathered is based on a self-report form. Besides, the use of an online survey in the study limits the generalizability of the results but is the best way to collect data during curfews and social distances.

5. Conclusion

In a pandemic, fear can increase the anxiety and stress levels of individuals, causing mental problems, as well as worsening the symptoms of people with existing mental problems (Shin & Liberzon, 2010; Shigemura, Ursano, Morganstein, Kurosawa, & Benedek, 2020). As pathological fear is one of the key factors that structure trauma-related disorders (Foa, Huppert, & Cahill, 2006), the results of this study revealed that fear of Covid-19 and anxiety sensitivity can increase the risk of acute traumatic stress disorder. Managing fear of the coronavirus seems important to protect the public's mental health during the pandemic. It is recommended to policymakers and state administrators provide clear and real-time information about the pandemic, to check the messages given in the media to avoid exaggeration of fear. Mental health professionals can develop interventions that aim to increase individuals' resilience and reduce anxiety sensitivity to control fear levels. All these findings again revealed that university students should be supported in terms of mental health. Especially the support systems that aid psychological well-being such as accessible online psychological help, and online social support groups have great importance during and after the pandemic. It has been thought that it may be beneficial to develop intervention programs targeting anxiety sensitivity to prevent trauma symptoms.

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