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INVESTIGATION OF THE RELATIONSHIP BETWEEN COVID-19 FEAR AND INTOLERANCE OF UNCERTAINTY AND GENERALIZED ANXIETY DISORDER

Research article

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Abstract

In this study, it was aimed to investigate the relationship between Covid-19 fear and intolerance of uncertainty and generalized anxiety disorder in individuals aged 18-65 years and older. Also, it was examined whether Covid-19 and intolerance of uncertainty predicted generalized anxiety disorder significantly. In this study, data were collected, using convenience sampling model, from a total of 843 people, including 547 females (64.9%) and 296 males (35.1%) in July and August 2020. The data collecting tools of the study were the Covid-19 Fear Scale, the Intolerance of Uncertainty Scale (IUS), and the General Anxiety Disorder Test (GAD-7). The correlations between COVID-19 fear total score and IUS total score, and sub-scales' scores, and GAD-7 total score were examined using the Pearson Product-Moment Correlation Coefficient technique. As a result of the analysis, it was seen that there were significant and positive relationships between Covid-19 fear total score and IUS total, as well as between subscales' scores and GAD-7. Additionally, the prediction level of COVID-19 fear and intolerance of uncertainty on generalized anxiety disorder was tested via Multiple Regression Analysis, and it was observed that the fear of COVID-19 and IUS total score, IUS1, IUS4 were significant predictors of generalized anxiety disorder.

Key words: Covid-19 fear, intolerance of uncertainty, generalized anxiety disorder, pandemic.

1. Introduction

Diagnostic and Statistical Manual of Mental Disorders (DSM) 5 defines Generalized Anxiety Disorder (GAD) as a disorder in which the individual is in a state of excessive anxiety and anxious anticipation about many events or activities most days. The people with GAD have difficulties controlling their delusions, and their functionality is impaired. At the same time, for a formal diagnosis of GAD, at least three of the symptoms such as fatigue, impaired concentration, restlessness, irritability, muscle tension and disturbed sleep should be observed in the individual for at least six months (APA, 2013). In a study conducted in developed and developing countries, it was found that the presence of symptoms between 1-3 months was sufficient for the diagnosis of GAD, so it was recommended to change the condition of six months in the diagnostic books (Lee et al.2009). Furthermore, in

International Classification of Diseases 11 (ICD 11), it was determined that the change in normal response to the stressor that continues for several months without specifying a full duration would be sufficient for the diagnosis of GAD (Kogan, Stein, Maj, First, Emmelkamp & Reed, 2016). While ICD 11 agreed with DSM 5 on the general course and physical symptoms of the disorder, it also added that generalized anxiety disorder classified in anxiety and fear related disorders can be considered with other mental and behavioral disorders by characterizing it with anxiety and general anxiety, which are not limited to any stimulants, in various areas of daily life (Reed et al., 2019). Generalized anxiety disorder is the type of disorder that causes the most expenditure from health care among the anxiety disorders. Therefore, it has a negative effect on the economy (Wittchen, 2002). GAD is more common in women and people over 35 years of age, with low education level, living in rural areas, living alone, unmarried and unhealthy according to their own assessments (Cheah, Azahadi, Phang & Manaf, 2020; Kantor & Kantor, 2020; Wittchen, 2002). The period of COVID-19 pandemic is a process that is potentially generating intense anxiety, containing uncertainty. Therefore, there is a risk of revealing GAD.

COVID-19 is a disease that leads to fear, worry and anxiety among individuals worldwide (Ahorsu, Lin, Imani, Saffari, Griffiths & Pakpour, 2020). On March 11, 2020, the World Health Organization (2020) defined COVID 19 as a pandemic that spread to 114 countries with 118,000 cases and killed 4,291 people worldwide. Furthermore, the WHO stated that the word pandemic is a concept that can cause fear, unnecessary pain and death in humans. Pandemic has social and psychological effects on society (Perrin, McCabe, Everly & Links, 2009). In various pandemics experienced by the world, it was observed that people's worry and anxiety levels increased significantly at the beginning of the pandemic, while their anxiety levels decreased significantly when the pandemic ended if the process was managed correctly (Bults, Beaujean, de Zwart, Kok, van Empelen, van Steenbergen, ... & Voeten, 2011; Cowling, Ng, Ip, Liao, Lam, Wu, ... & Fielding, 2010; Ro, Lee, Kang, & Jung, 2017). While the anxiety and stress felt by people's trusted relatives caused them to feel anxiety, fear and stress (Remmerswaal & Muris, 2011), the practice of social distance to control the pandemic was also associated with high anxiety (Cowling et al., 2010). While COVID-19 and social isolation and dysfunctional coping with stress have a disruptive effect on the psychological symptoms of individuals, psychological resilience has a protective effect (Bilge and Bilge, 2020).

Information about COVID-19 is widely available in both media and social media channels (La, Pham, Ho, Hoàng, Linh, Vuong,…& Vuong, 2020; Roose & Gabriel, 2020). Social media usage increased by 50% (Isaac & Frenkel, 2020) and listening to daily newscast increased by 23% (Doğan News Agency [DHA], 2020, May 2) especially after the stay-at-home calls to prevent the spread of the pandemic. Information obtained through the media and social media channels can be reliable, as well as lead people to misdirection. For example, Pandey, Patni, Singh, Sood & Singh (2010) examined the content posted on YouTube during the H1N1 pandemic and found that these contents contain 61.3% useful information, while 23% contain incorrect information, respectively. The level of worry in humans increases as they receive informal information (Ro, Lee, Kang, & Jung, 2017).

Rumors and misinformation have negatively affected physiological states of people during the H1N1 pandemic (Pandey et al., 2010). There has been news reporting that people commit suicide due to the fear for COVID-19 (DHA, March 31, 2020), but it is not yet clear what the psychological and physiological consequences of the COVID-19 pandemic will be (Xiang, Yang, Li, Zhang, Zhang, Cheung & Ng, 2020).

Xiang et al. (2020) stated that symptoms such as fever and cough, which are symptoms of COVID-19, may cause higher worry, fear and anxiety in humans. Individuals with high levels of fear may not think rationally when reacting to COVID-19 (Ahorsu et al., 2020). Fear for COVID-19 was found to be higher in women and people with chronic diseases (Bakioğlu, Korkmaz & Ercan, 2020). COVID-19 is found to be positively related to some variables such as depression, anxiety, stress, and germ avoidance (Ahorsu et al., 2020; Bakioğlu, Korkmaz, & Ercan, 2020; Satıcı, Göçet-Tekin, Deniz, & Satıcı, 2020); while negatively related to some other variables such as mental well-being (Satıcı, Sarıcalı, Satıcı, Griffiths, 2020), life satisfaction doyumu (Satıcı, Göçet-Tekin, Deniz & Satıcı, 2020), pozitiflik (Bakioğlu, Korkmaz & Ercan, 2020). Intolerance of uncertainty is another variable positively associated with fear that occurs in the pandemic period (Satıcı, Sarıcalı, Satıcı, Griffiths, 2020; Taha, Matheson, Cronin & Anisman, 2014).

Several studies have shown that intolerance of uncertainty is a distinctive cognitive process of non-pathological anxiety and is also found in the etiology of generalized anxiety disorder (Dugas et al., 2001; Dugas, Schwartz, & Francis, 2004). Intolerance of uncertainty can be defined as the individual's thought that it is unacceptable to think that a negative event can occur despite the small likelihood of occurrence, and is highly associated with a tendency to excessive, uncontrollable anxiety (Dugas, Gosselin & Ladouceur, 2001). At a time of uncertainty caused by a pandemic that has a worldwide impact, obtaining additional and clear information such as vaccine-related developments, how the virus transmit to people and the number of infected cases was found to be associated with lower anxiety levels (Wang, Pan, Wan, Tan, Xu, Ho, Ho, 2020). Uncertain situations adversely affect people. Similar cases have occurred during previous pandemics. According to the results of a study conducted in the process of bird flu and pandemic influenza, anxiety about infection and its effects were found to be associated with anxiety about unknown risks. The 18-39 age group in particular is concerned about how to deal with the flu (Yamazaki & Kikkawa, 2010). Individuals with intolerance of uncertainty are more likely to perceive the pandemic process as threatening due to their tendency to use emotion-oriented coping strategies (Taha, Matheson, Cronin & Anisman, 2014). In a study conducted, it was observed that intolerance of uncertainty increased rumination, increased rumination increased fear for COVID-19, and fear for COVID-19 significantly reduced mental well-being (Satıcı, Sarıcalı, Satıcı, Griffiths, 2020). When uncertainty is removed from fear for COVID-19, the level of positivity of the individual increases by reducing depression, anxiety and stress levels (Bakioğlu, Korkmaz, & Ercan, 2020).

Pandemics and infectious diseases pose significant levels of anxiety and stress. Studies around the world have shown that post-COVID-19 anxiety levels have increased. A study

conducted in Arabia, which has the experience of MERS-CoV, found that health workers had high levels of anxiety even before the COVID-19 case was seen (Temsah et al., 2020). Anxiety is widely seen in the general population of the United States after the COVID-19 pandemic. As a result of a study conducted with 1020 participants, it was found that all participants met the criteria of generalized anxiety disorder, while 41.4% of them met the clinical criteria (Kantor & Kantor, 2020). In a study conducted in Hong Kong, it was found that 14% of 500 participants had high GAD scores, while 25.4% of the participants stated that their mental health deteriorated during the pandemic (Choi, Hui, Wan, 2020).

2. Method

2.1. Participants

This study was conducted from a total of 843 participants selected via convenience sampling method. Demographic data of the participants are given in Table 1 below.

Table 1. Demographic Data of the Participants

		N	%
Gender	Female	547	64.9
	Male	296	35.1
Total		843	100
Age	18-25	281	33.3
	26-35	176	20.9
	36-45	192	22.8
	46-55	160	19.0
	56-64	25	3.0
	65 years of age and above	9	1.1
Total		843	100
Education	Primary School	14	1.7
	Middle School	12	1.4
	High School	101	12.0
	University	578	68.8
	Master Degree	138	16.4
Total		843	100
Income	Between 1500-3000 TL	320	38.0
	Between 3100-4500 TL	157	18.6
	Between 4600-6500 TL	212	25.1
	Between 6600-8500 TL	64	7.6
	8600 TL and above	90	10.7
Total		843	100

As shown in Table 1, 547 (64.9%) of the participants were female and 296 (35.1%) were male; 281 (33.3%) were between 18-25 years of age, 176 (20.9%) were between 26-35 years old, 192 (22.8%) were between 36-45 years old, 160 (19%) were between 46-55 years old, 25 (3%) were between 56-64 years old and the remaining 9 (1.1%) aged 65 and over; 14 (1.7%) of the participants were graduates of primary school, 12 (1.4%) were graduates of middle

school, 101 (12%) were graduates of high school, 578 (68.8%) were university graduates and the remaining 138 (16.4%) was holding a master's degree; while the monthly income of 320 (38%) participants was between 1500-3000 TL, 157 (18.6%) between 3100-4500 TL, 212 (25.1%) between 4600-6500 TL, 64 (7.6%) 6600-8500 TL and the monthly income of 90 (10.7%) participants is 8600 TL and above, respectively.

2.2. Data Collection Tools

2.2.1. Fear of COVID-19 Scale

The Fear of COVID-19 Scale, which was developed by Ahorsu et al. (2020), is a five-point Likert-type scale consisting of 7 items. There is no reverse scoring in the scale, high scores indicate that the fear for COVID-19 is high (Satıcı, Göçet-Tekin, Deniz, & Satıcı, 2020). The scale was adapted to Turkish by Satıcı, Göçet-Tekin, Deniz, & Satıcı (2020). Cronbach's alpha (α = .847), McDonald omega (ω = .849), Guttmann lambda ($\lambda 6$ = .844) and composite reliability (CR = .842) values shows that the scale adapted to Turkish is valid and reliable.

2.2.2. Intolerance of Uncertainty Scale

The Intolerance of Uncertainty Scale, which was developed by Freeston, Rheaume, Letarte, Dugas and Ladouceur (1994) and adapted to Turkish by Sarı and Dağ (2009), is a five-point Likert-type scale consisting of 27 items. The scale consists of four factors as follows: i) Uncertainty is stressful and upsetting, ii) Uncertainty leads to the inability to act, iii) Unexpected events are negative and should be avoided and iv) Uncertainty is not fair. Cronbach's alpha coefficients obtained from subscales were 0.88, 0.79, 0.79 and 0.79, respectively; and it was found to be 0.79 for the total score. In addition, the internal consistency of the scale was found to be 0.93, and test-retest reliability as 0.66 (Sarı & Dağ, 2009).

2.2.3. Generalized Anxiety Disorder Test (GAD-7)

Generalized Anxiety Disorder test-7 (GAD-7) was developed by Spitzer, Kroenke, Williams, Löwe (2006) according to DSM-IV-TR criteria in order to evaluate generalized anxiety disorder. It is a four-point Likert-type scale consisting of seven items. The total scores of the scale 5, 10 and 15 are cut-off points for mild, moderate and severe anxiety, respectively. The scale was adapted to Turkish by Konkan, Şenormancı, Güçlü, Aydın, Sungur (2013). Cronbach's alpha value of GAD-7 test total score was found to be 0.85. According to the test-retest measurements performed at three-week intervals, the measurements were seen to be consistent with each other. These results show that the Turkish version of GAD-7 is a reliable test (Konkan et al., 2013).

2.3. Collection and Analysis of the Data

The scales were uploaded to Google forms and then shared with participants through Google Classroom. The data were collected from adult participants, who voluntarily participated in the study, within approximately two weeks in July and August. The relationship between the data collected and total scores and subscale scores of Fear of COVID-19 Scale, Intolerance of Uncertainty Scale and Generalized Anxiety Disorder Scale was analysed by using the Pearson Product-Moment Correlation Coefficient Technique. The predictive power of the fear for COVID-19 and intolerance of uncertainty on generalized anxiety disorder were tested by the multiple regression analysis. The analyses were performed with IBM SPSS 20.0 package program.

3. Findings

3.1. The Relationship Between Fear for COVID-19, Intolerance of Uncertainty and Generalized Anxiety Disorder

Whether there is a significant relationship between fear for COVID-19, intolerance of uncertainty and generalized anxiety disorder was examined by using the Pearson Product-Moment Correlation Coefficient Technique. The results are given in Table 2.

Table 2. Pearson Correlation Levels for the Relationship between Fear for COVID-19, Intolerance of Uncertainty and Generalized Anxiety Disorder

		COVID-19	IUS-1	IUS-2	IUS-3	IUS-4	IUS Total
Generalized	**r**	.390***	.537***	.551***	.491***	.434***	.570***
Anxiety	**p**	.000	.000	.000	.000	.000	.000
Disorder	**N**	843	843	843	843	843	843

***p<.001

Considering the data given in Table 2, there is a significant and positive relationship between the total score of COVID-19 scale (r = .390, p <.001), IUS-1 (r=.537, p<.001), IUS-2 (r=.551, p<.001), IUS-3 (r=.491, p<.001), IUS-4 (r=.434, p<.001), and IUS-4 total score (r = .570, p <.001) variables and generalized anxiety disorder. Accordingly, it is clear that as the COVID-19 and IUS scores increase, the generalized anxiety disorder score also increases.

3.2. Findings Regarding Whether the Fear for COVID-19 and Intolerance of Uncertainty Significantly Predict the Generalized Anxiety Disorder

The predictive power of the fear for COVID-19 and intolerance of uncertainty on generalized anxiety disorder were tested by the multiple regression analysis and the results are given in Table 3.

Table 3. The Analysis Results Regarding the Predictive Power of the Fear for COVID-19 and Intolerance of Uncertainty on the Generalized Anxiety Disorder

Variable	B	Standard Deviation	β	t	p	Zero- Order r	Partial r
Constant	3.667	.537	-6.829	.000		-	-
COVID-19	.140	.024	.177	5.780	.000	.390	.196
IUS-1	153	.030	.280	5.049	.000	.551	.172
IUS-2	.036	.051	.051	.707	.480	.537	.024
IUS-3	-.126	.080	-.106	-1.576	.115	.491	-.054
IUS-4	-.194	.063	-.180	-3.104	.002	.434	-.107
IUS Total Score	.153	.030	.696	5.049	.000	.570	.172

$R=.603$, $R^2=.363$, $F(5,837)= 95.557$, $p=.000$

Considering the data given in Table 3, it is seen that there is a significant relationship between the variables of fear for COVID-19 and intolerance of uncertainty and generalized anxiety disorder ($R=0.603$, $R^2=0.36$, $p<.001$). Accordingly, fear for COVID-19 and intolerance of uncertainty explain 36% of the total variance in generalized anxiety disorder.

According to the standardized regression coefficient (β), the relative importance order of the predictive variables on generalized anxiety disorder is as follows; IUS total score, IUS-1, IUS-4, COVID-19, IUS-3 and IUS-2, respectively. Considering the t-test results related to the significance of regression coefficients, it has been seen that COVID-19, IUS total score, IUS-1 and IUS-4 are important predictors on GAD, while IUS-2 and IUS-3 do not have significant effects on GAD.

4. Discussion and Conclusion

According to the results of the study, there is a positive and significant relationship between generalized anxiety disorder and the total score of COVID-19 scale and subscales of the intolerance of uncertainty scale and the total score of IUS. In line with the findings, it was observed that as the fear for COVID-19 and the intolerance of uncertainty increases, generalized anxiety disorder scores also increase. Fear for COVID-19 and intolerance of uncertainty explain 36% of the total variance in generalized anxiety disorder. According to the findings, the variables with the greatest impact on the generalized anxiety disorder scores are listed as follows; the total score of IUS, IUS-1, IUS-4, fear for COVID-19, IUS-3 and IUS-2, respectively. Considering t values in particular, fear for COVID-19, IUS total score, IUS-1 and IUS-4 are important predictors on generalized anxiety disorder.

The relational findings of the study are supported by the literature. There are studies suggesting that there is a positive and significant relationship between generalized anxiety disorder and fear for COVID-19 (Choi, Hui, Wan, 2020; Kantor & Kantor, 2020). Similarly,

the positive and significant relationship between generalized anxiety disorder and the total score and subscale scores of intolerance of uncertainty scale is supported by the literature (Holaway, Heimber, Coles, 2006; Yook, Kim, Suh,& Lee, 2010). There are also studies supporting that there is a relationship between fear for COVID-19 and intolerance of uncertainty (Bakioğlu et al., 2020; Satıcı et al., 2020).

It was found that one of the variables that had a significant effect on generalized anxiety disorder was the total score of intolerance of uncertainty. There are studies suggesting that intolerance of uncertainty is more associated with generalized anxiety disorder than other anxiety disorders (Dugas et al., 2001, Dugas et al., 2004, Dugas, Marchand, & Ladouceur, 2005). Generalized anxiety disorder is a disorder that shows symptoms characterized by anxiety (APA, 2013). Intolerance to uncertainty is a condition, in which individuals have difficulty accepting uncertain situations and experiencing intense anxiety (Dugas et al., 2001). In line with these conclusions, it can be said that intolerance of uncertainty is expected to be effective on generalized anxiety disorder symptoms. The IUS-1 (emotional response to uncertainty), which is a subscale of the intolerance of uncertainty scale, has the most significant effect on generalized anxiety disorder. Anxiety levels of individuals with high intolerance of uncertainty are expected to be higher since they are more prone to use emotion-driven coping strategies (Taha et al., 2014) and give emotional responses when they face uncertain situations (Dağ & Sarı, 2009). The second subscale effective on the generalized anxiety disorder was found to be IUS-4 (behavioral response of uncertainty). The crisis caused by COVID-19 required a high level of behavioral change (Van Bavel et al., 2020). According to the findings of a meta-analysis study, highly fearful situations increase the perception of the severity of the event and sensitivity of the person regarding the situation. Fear can motivate adaptive danger control actions as well as activating maladaptive fear control actions such as defensive avoidance (Witte & Allen, 2006). As the interest of content of the fearful message in relation to the person increases, the level of defensive avoidance also increases. With the increase of defensive avoidance, people's biased behaviours may emerge (Liberman, Chaiken, 1992). Therefore, stimulants causing fear should also contain information about the solution of fear (Aronson, Wilson,& Akert, 2012). However, the COVID-19 pandemic process raises anxiety in individuals due to the lack of clarity on the issues related to the solution despite high fear. This anxiety causes risky behaviours and inability to think rationally (e.g. Ahorsu et al., 2020).

Fear for COVID-19 is another variable that has a significant effect on generalized anxiety disorder. Epidemic diseases have caused anxiety in humans throughout history (Bults et al., 2011; Cowling et al., 2010). The COVID-19 is a period, in which people's social lives are seriously blocked, transmission ways of the virus are unknown and there is a risk of endangering the health of people and their relatives/loved ones. In previously encountered situations similar to the COVID-19, for example, in the H1N1 pandemic, health anxiety was found to be an important predictor of pandemic-related anxiety (Wheaton, Abramowitz, Berman, Fabricant, & Olatunji, 2012). Similarly, according to the findings of a study conducted with multiple logistical regression analysis during the COVID-19 period, the discomfort caused by not having a SARS epidemic before and lack of having quality medical

mask as well as the discomfort caused by not working from home were found to be associated with poor mental health (Choi, Hui, Wan, 2020). In addition, the fear related to the pandemic, which has grown under the influence of the variables that feed fear and anxiety, also causes generalized anxiety disorder. As a result of a study conducted on the normal population in the United States, the fact that the participants met the clinical diagnostic characteristics at a high rate supports this finding (Kantor & Kantor, 2020).

5. Limitations and Implications

The data used in the research were collected through online forms. In this context, it is assumed that the participants gave sincere answers to the questions given in the forms. In the research, the concept of generalized anxiety disorder refers to the characteristics measured by the measurement tool and it does not correspond to a clinical term. However, although this term is used extensively in the literature, it has the potential to cause concept confusion.

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