

An Analysis on Sleep Habits and Generalized Anxiety Levels of Individuals during the COVID-19 Pandemic

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ABSTRACT

COVID-19 pandemic affecting the entire world rapidly and unpreparedly also continues to increase its effect in our country. In addition to the economic and health problems repeatedly addressed, the negative impact of the pandemic on human psychology also draws attention. In this study where we tried to measure the psychological impact of COVID-19 pandemic on the society, the anxiety level of the individuals and some parameters such as anxiety-related sleep habit were also studied. In this context, the data were collected through a questionnaire generated by the researcher and GAD-7 scale (Generalized Anxiety Disorder) The research design was developed according to correlational survey design, one of the quantitative research methods. In the study, data were collected from 451 people (M = 226, F = 225) through online forms using easy sampling method. Results were analysed with descriptive statistics and independent t test methods. According to the results of the study, it was determined that a big part of the participants had high anxiety levels. Also, it was determined that individuals' sleeping habits changed and they had trouble sleeping during COVID-19 pandemic. The study found that individuals having trouble sleeping, had a higher inclination to have generalized anxiety. The results were discussed in accordance with the literature and some proposals were made.

Keywords: Anxiety, COVID-19 pandemic, sleep problems

INTRODUCTION

The fact that the coronavirus (COVID-19) pandemic that has been labelled a pandemic by the World Health Organization (WHO), have spread to approximately 4 million people and killed more than 250,000 people worldwide, exposed the terrifying side of the virus. (WHO, 2020). As the number of coronavirus cases in Turkey reached around 140,000 and death toll reached above 4,000 in the short time (as of May), the traumatic effect of the pandemic became drastically noticeable. (Health Ministry, 2020). The negative effects of the virus that seemed as if it is an infection-related disease at first sight (Zhou, Yu, Du, Fan, Liu, Liu, ... & Guan, 2020), became efficient in whole life of individual (economic, social, cultural and mental) The rapid spread of the virus in social life (VanderWeele, Chen, Long, Kim, Trudel-Fitzgerald, & Kubzansky, 2020) shows that the problem facing the society is not only health-associated, but it also involves a multidisciplinary dimension. (Turkish Academy of Sciences, 2020). An usual process has started in individuals' lives, by introducing restrictions to social activities, announcing curfews, closing some workplaces and (cafes, restaurants, barbershops etc.) and schools (Interior Ministry, 2020), to decrease the spreading speed of the virus (Üstün & Özçiftçi, 2020) During the

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COVID-19 pandemic, many people had to stay at home, work from home unusually, and some of them lost their job. On the other hand, healthcare staff, police officers, others worked in compulsory services (energy sector workers, etc.) and volunteers (Vefa social support groups) continue to perform their duties feeling uneasy and under more difficult conditions than they used to be before. It is foreseen that these processes would affect the social and mental lives of individuals negatively (Aktaş, 2003; Leung, Ho, Chan, Ho, Bacon-Shone, Choy, ... & Fielding, 2005; Taylor, Kingsley, Garry, & Raphael, 2008).

It is stated that cases such as outbreak and crisis disrupt individuals' existing compliance mechanism. (Kavakçı, 2014). During these processes, people try to answer some questions to feel safe and adapt to changes in their social lives. The questions such as "How do I know if I'm sick too", "what should I do not to get sick?", "am I going to die too?", "Would it be possible to achieve the food and hygiene supplies that I will need?" starts to occupy the minds of individuals. It is claimed that the things the individuals concerned about, anxiety behaviours related to uncertainties trigger generalized anxiety development (Dugas, Buhr, & Ladouceur, 2004). Since no vaccine and drug for COVID-19 virus have been developed yet and the time for returning normal is not obvious yet (Koyuncu, 2020), individuals' beliefs about uncertainty may go up higher levels.

The cognitive factors have key roles in the development of individuals' intolerance against the uncertainty (Şenormancı, Konkan, & Şenormancı, 2017). During outbreaks, individuals' cognitive interpretations on disease and uncertainty may be related to their behaviours (Hekler, Lambert, Leventhal, Leventhal, Jahn, & Contrada, 2008). This data points out that the behaviours people will demonstrate are important in terms of preventing the outbreak and reducing the speed of its spread. When the thoughts regarding outbreak and the disease are combined with uncertainty that has never been experienced before, the anxiety level may increase (Aktaş, 2003; Huang & Zhao, 2020; Wichert, 2001; Wong, Gao, & Tam, 2007; Xiang, Yang, Li, Zhang, Zhang, Cheung, & Ng, 2020; Yusuf, 2020).

Anxiety can be expressed as the reactions we give when we do not know what to do about an extraordinary situation that we face for the first time in general (Kauffman & Landrum, 2015; Morgan, 2011, p.100; Taş, 2006). The generalized anxiety is that the individual worry for no reason and think constantly that negative thing will happen (Morrison, 2017). It can be associated with the concern of what will happen, losing control or general uncertainty thought. The generalized anxiety is that the individual worry for no reason and think constantly that negative thing will happen. Considering that this uncertainty might make his/her life unbearable, it is vital to determine the anxiety causes and generalized anxiety level of individuals during such outbreaks. If the causes of anxiety, anxiety levels and generalized anxiety predisposition of individuals are foreseen, individuals' control feelings can be strengthened, and studies can be conducted to reduce levels of intolerance regarding uncertainty. Determining what people going through in extraordinary crisis and taking quick steps in this direction are considered important for both scientists and government officials and it will also contribute to the return to normal life (Çırakoğlu, 2011; Ekiz, İlman, & Dönmez, 2020; Turkish Academy of Sciences, 2020). In addition, long-term quarantine periods lead to sense of loneliness and isolation as well as trigger many psychological problems (Gordon, Waller, Cook, Cavalera, Lim, & Osadnik, 2019). This information emphasizes the need to determine the anxiety levels of individuals during the COVID-19 pandemic.

The anxiety levels of individuals can be associated with their sleeping habits (Chen, Chou, Huang, Wang, Liu, & Ho, 2006; Huang & Zhao, 2020; Konkan, Şenormancı, Güçlü, Aydın, & Sungur, 2013; Lee, 2020; Morrison, 2007; Tutar, 2000, p.208; Zhang, Yang, Liu, Ma, Wang, Cai,... & Zhang, 2020). For instance, it is suggested that individuals can have intensely sleeping trouble (sleep-onset insomnia, frequent awakening etc.) during outbreaks. (Huang & Zhao, 2020; Sher, 2020).

The sleep routine of individuals whose anxiety levels are high, is disrupted and even their daily routine can be interrupted. Looking at the stories of individuals whose sleep patterns are disrupted and who have trouble sleeping, it is seen that anxiety is added to their current problems. (Fernández-Mendoza, Vela-Bueno, Vgontzas, Olavarrieta-Bernardino, Ramos-Platón, Bixler & Cruz-Troca, 2009). Thus, we can say that it is very important to obtain information about the anxiety level and sleep routine of individuals. Because the lack of concentration increases the intensity of anxiety in individuals having sleep disorders and problems (Köroglu, 2013; Köse, Yılmaz, & Gökteş, 2018; Morrison, 2017). This may affect an individual's coping skills during the pandemic and slow their fight with uncertain and difficult situations. To properly understand the cognitive processes related to the anxiety experienced by individuals during the pandemic, knowing the behaviours accompanying anxiety and determining the ways to cope with uncertainty can make a significant contribution to the detection and resolution of anxiety-related problems. When the literature regarding anxiety and sleep (Chen et. al, 2006; Gosselin & Laberge, 2003; Huang & Zhao, 2020; Lee, 2020; Zhang et. al, 2020) are considered together, we found not any study examining simultaneously the anxiety levels and sleeping patterns of individuals during the outbreaks such as COVID-19. The study is original on that sense. When the literature is examined, it is seen that there are limited studies conducted on the relationship between anxiety and sleeping habits (Chen et. al, 2006; Huang & Zhao, 2020; Lee, 2020; Zhang et. al, 2020). There are also few studies conducted on anxiety disorders experienced by individuals during the outbreaks (Gordon, Waller, Cook, Cavallera, Lim, & Osadnik, 2019; Huang & Zhao, 2020; Lee, 2020); and on sleeping habits during hard, uncertain and problematic periods. (Huang & Zhao, 2020; Sher, 2020).

Moreover, it has been observed that most of the studies related with the outbreak, are the ones consisting of the definition of virus, the speed and scale of the outbreak and the methods to protect yourself from virus (Yusuf, 2020). However, because of the COVID-19 pandemic, many people stay at home, some have to go to work despite the virus threat. Their income decreases to a large extent, as a result of the closure of some workplaces, and thus they may suffer psychological problems due to the uncertainty created by the virus.

It has become important to examine the level and predisposition of individuals' anxiety experienced during the COVID-19 pandemic to raise the life quality and to make sure that overcoming the pandemic is smooth. This study aims to examine the level of anxiety individuals experience during the COVID-19 pandemic. What is the anxiety level of individuals during the COVID-19 pandemic? How did the anxiety level of individuals and sleep/sleeping habits changed, compared to the pre-pandemic? Is there any relationship between the anxiety levels and trouble sleeping of individuals during the pandemic? As part of this study, we will try to answer these questions. The study also aims to determine the level of predisposition to generalized anxiety during the pandemic. It is also aimed to constitute a source for later scientific studies and also to provide support to the researchers studying on examining the individuals' anxiety level during the COVID-19 pandemic, in comparison with the pre-pandemic;

generalized anxiety problems and sleeping habits; and to the policymakers developing policies on managing epidemics.

METHOD

Research design

It is important to understand the situations and circumstances and make predictions in social studies. The research method that allows the researchers to see and understand the mentioned relationships is relational search model. Relational search is a model aiming to determine whether there is a relationship between two or more quantitative variables and what level it is. (Fraenkel, Wallen, & Hyun, 2012; Gay & Airasian, 2000; Karasar, 2008).

Participants

The study group has been selected according to the simple sampling method. Simple sampling method provides the researcher with the opportunity to access targeted data more quickly and economically. (Cohen, Manion, & Morrison, 2007). Within this context, the research sample has been selected from citizens between 18-68 ages in Turkey. Accordingly, 451 people (Female= 225, Male= 226) have been reached. All gathered questionnaires have been included in the analysis process.

Data Collection Tools

Demographic Variables Form (Form A)

The data collection tool used in the study consisting of two sections. In the first section of the data collection tool, there are questions for the respondents on their demographic characteristics, and experiences they had during the COVID-19 pandemic. The questions items used in this section were prepared in line with the literature (Akyay, 2016; Chen et al., 2006; Çırakoğlu, 2011; Gordon et al., 2019).

Generalized Anxiety Disorder (GAD-7) Scale

As a part of the study, "Generalized Anxiety Disorder (GAD-7) Scale" developed by Konkan et al. (2013) was used to determine the level of anxiety of individuals during the pandemic. The scale measures the severity of Generalized Anxiety Disorder according to DSM diagnostic criteria. YAB-7 test showed significant correlation between all substances, internal consistency ($\alpha= 0.85$) and good stability in intermittent application. Factor analysis for structural validity ($KMO= 0.90$) found that the factor structure is similar to the original test and that its structural validity is good. It is a four-point likert scale (0=never, 1=several days, 2=more than half the time, 3=nearly every day) based on self-report. Scores of 5, 10, and 15 are taken as the cut-off points for mild, moderate, and severe anxiety, respectively. Further evaluation with other clinical trials should be performed when the score is 10 or greater.

Research Procedure

Within the framework of the research subject, form A of the data collection tool was prepared to determine the demographic characteristics of the respondents in line with the relevant literature. The quantitative form used in the study was created taking the literature on COVID-19 and anxiety into consideration and was addressed within a structure consistent with the hypotheses. After the Form A of the data collection tool was prepared by the researchers, the opinions of two experts in the field have

been taken. Secondly, necessary permits were taken by e-mail for GAD-7 Scale to be used within the context of the study. The data collection tool on which the last touches have been put, was sent to the randomly selected groups such as officials, workers, craftsmen and students across Turkey, by e-mail and on WhatsApp. The scope of the survey forms was kept brief to fill out the forms easily and they were intended to be replied in about ten minutes. Finally, the data obtained, were processed and analysed in accordance with the research question.

Data Analysis

Survey data was analysed by using SPSS 23.0. The information regarding research variables was presented by using the descriptive statistical techniques. In addition to the descriptive statistics, independent t-test analysis was used.

The first step of the analysis processes constituted the normality tests of the groups. Visual (histogram) and analytical (Kolmogorov-Smirnov, Shapiro-Wilk) methods were employed to see whether groups showed normal distribution. The analysis showed that groups exhibited normal distribution and were homogeneous. Then, the values of skewness and kurtosis of GAD-7 scores and whether these scores showed normal distribution were examined. Skewness, Kurtosis, Kolmogorov-Smirnov and Shapiro-Wilk values and histogram images were examined and these values found to show normal distribution

FINDINGS

Results on Demographic Variables

Frequency values for identifying demographic characteristics of participants are presented in Table 1. Based on results on demographic variables, majority of the participants are married (60.1%). The divorced represent the smallest share (3.3%). Based on data on marital status, the highest share is married people (60.1%) and the lowest is divorced and widowed people.

Table shows results on the professional lives of participants during the COVID-19 pandemic. As is known, the pandemic may influence people's lives greatly. While the majority of the participants were actively employed (43.2%), a considerable part had been unemployed (23.3%) for a long time. In addition, 16% of the employed said to be on paid leave, while 6% said to be on unpaid leave. In addition, based on the data, businesses of 3.5% of the participants were shut down and 0.9% lost their jobs due to the pandemic. Given that social isolation is the most effective way to slow down the spread of COVID-19, the majority of the participants (86.3%) has been following this rule by staying home during the pandemic. Only 13.7% has not been able to stay home due to work. In terms of the spread of COVID-19, 11.3% of the participants have contracted the disease themselves, or someone in their social circle has contracted it. Based on the research data related to the fatality of COVID-19, 3.8% of the participants had someone in their close social circle who lost their lives due to COVID-19.

Given the fact that people spend more time in their homes during the COVID-19 pandemic, it is likely that some daily routines underwent changes. Based on the data of sleep habits of participants, only 33.7% of the participants had not experienced any change in their sleep duration. On the other hand, the majority of the participants reported that they were sleeping more (52.8%) and some reported that they were sleeping less (13.5%). Another data on sleep habits is sleep-related problems participants were

experiencing during the pandemic. According to the research data, 51.4% of the participants stated that their sleep habits had not deteriorated, while 48.6% stated that they had experienced sleep problems during the pandemic.

According to Table 1, the anxiety levels of participants has changed in line with changes to daily routines during the pandemic. A significant share of participants (37.9%) said that they were feeling more anxious compared to the period before the COVID-19 pandemic (February and before). Table 1 summarizes the answers provided by participants to questions on Form A.

Table 1.

Results on Demographic Variables

Variables	Participant (N= 451)	
	f	%
How many children do you have?		
Between 18 and 30	167	37.0
Between 31 and 45	209	46.4
45+	75	16.6
Marital status		
Married	271	60.1
Single	165	36.6
Divorced/Widower	15	3.3
Educational level		
Literate	3	,7
Primary school	17	3.8
Secondary school	19	4.2
High school	96	21.3
University	288	63.9
Post graduate	28	6.2
Your employment status?		
Official	142	31.5
State worker	12	2.7
Private sector worker	126	29.7
Craftsman	23	5.1
Student	62	13.7
Housewife	26	5.8

Jobless	48	10.6
Daily wage worker	8	1.8
Retired	4	.9
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Are you currently employed?		
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No, I am not employed	32	7.1
Yes	195	43.2
I am on unpaid leave due to COVID-19	27	6.0
My business shut down due to COVID-19	16	3.5
I lost my job due to COVID-19	4	.9
I am on paid leave due to COVID-19	72	16.0
I have been unemployed for a long time	105	23.3
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I have been home for a long time due to COVID-19		
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Yes	389	86.3
No	62	13.7
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Did you, your relative or a friend suffer from Covid-19 disease?		
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Yes	51	11.3
No	400	88.7
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Do you have a relative or a friend who lost his/her life due to COVID-19 pandemic?		
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Yes	17	3.8
No	434	96.2
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Has your sleeping time changed during the COVID-19 pandemic?		
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I have been sleeping less	61	13.5
I have been sleeping more	238	52.8
There has not been a change	152	33.7
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Have you been having sleeping problems during the COVID-19 pandemic?		
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Yes	221	48.6
No, I have not	230	51.4
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I feel more tense and anxious than before the pandemic (in February)		
<hr/>		
Yes	221	48.6
No, I have not	230	51.4
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Results on Anxiety Levels of and Sleep Problems Experienced by Individuals during the COVID-19 Pandemic

The analysis showed that groups exhibited normal distribution and were homogeneous. An independent group t test was conducted to determine whether the anxiety levels of individuals during the COVID-19 pandemic differed significantly by the variable of sleep problems experienced during the same period. The analysis of findings in Table 2 showed that the difference between the arithmetic averages of groups were statistically significant ($t=6,238; p=.00$). According to the stated results, the average value of GAD-7 was higher for individuals experiencing sleep problems. The difference between the averages demonstrates that individuals who were experiencing sleep problems during the COVID-19 pandemic had higher levels of anxiety.

Table 2.

Results of the Independent Group t Test Performed to Examine the Sleep Problems Experienced by and Anxiety Levels of Individuals during the COVID-19 Pandemic

Score	Groups	N	\bar{x}	ss	Sh	T Test		
						Sd	t	p
Generalized Anxiety Disorder (GAD)	Those not experiencing sleep	232	.74	.73	.06			
	Those experiencing sleep problems	219	1.17	.71	.06	549	6.238	.00

* $p < .05$

Results on Anxiety Levels of Individuals during the COVID-19 Pandemic

The GAD-7 test was made use of to assess the anxiety levels of participants. Total scores of the GAD-7 scale were calculated to determine the anxiety levels of individuals during the pandemic. The anxiety levels of individuals were presented in line with the cut points of the scale. Results in Table 3 show that 39.8% of the individuals did not show any tendencies to anxiety during the COVID-19 pandemic and 30.9% showed mild tendencies. In contrast, 20.6% of the participants showed a moderate level of tendencies to anxiety and 8.7% showed a high level of tendencies.

Table 3.

Anxiety Levels of Individuals during the COVID-19 Pandemic

Generalized Anxiety Disorder (GAD)	None		Mild		Moderate		High	
	f	%	f	%	f	f	%	f
	179	39.8	139	30.9	83	179	39.8	139

DISCUSSION

A reaction against a situation considered dangerous for an individual, anxiety is known to be related to that person's thoughts about the future. The level of anxiety may stay still but it may also increase due to changing situations (Beck, Emery, & Greenberg, 2005; Kauffman & Landrum, 2015; Özer, 2006). The aim of this study is to identify the level of anxiety experienced by individuals during the COVID-19 pandemic. In the discussion section of the study, the aim is to provide an overview of the characteristics of the COVID-19 pandemic, the measures introduced to slow down and prevent transmission, and the anxiety levels of individuals based on the changes they experience in their daily lives during the pandemic. This study identified some important clues with regard to the levels of anxiety individuals have been experiencing during the COVID-19 pandemic, which has spread all over the world unexpectedly. It was found that the levels of predisposition to anxiety was very high in the majority of participants during the pandemic. According to the literature, the prevalence of lifelong anxiety is around 5% (Kessler, McGonagle, Zhao, Nelson, Hughes, Eshleman, Wittchen, & Kendler, 1994; Sadock & Sadock, 2008; Wittchen & Hoyer 2001). The study found the generalized anxiety levels of participants to be well above the levels in the wider society.

The uncertainty, social isolation measures, financial difficulties, and staying home for longer periods during the COVID-19 pandemic are the reasons why the generalized anxiety levels in this study were higher than the literature. Because the study participants are going through extraordinary times. It was found that the majority of the participants had been staying home for a long time, left their jobs and not been able to meet their social circle. Such traumatic events increase the level of anxiety in individuals, which is a finding in line with the literature (Çakır, 2007; Çırakoğlu, 2011; Wong et al., 2007; Zara, 2011). In addition, the news reporting that the pandemic will continue for a long time (Koyuncu, 2020) increase the feeling of uncertainty in individuals. It could be noted that the findings of the study are consistent. There are studies in the literature suggesting that the prevalence of anxiety is higher in extraordinary times, similar to the findings of this study (Özcan, Uğuz, & Çilli, 2006; Xiang et al., 2020; Wittchen 2002; Wu, Chan, & Ma, 2005). In addition, the majority of participants had someone in their social circle who either contracted COVID-19, or died because of it. The high levels of anxiety can also be associated with the fact that the majority of the participants were middle-aged and employed. Because according to a study, the level of anxiety was found high in middle-aged and employed individuals (Özcan, Uğuz, & Çilli, 2006). High levels of anxiety in a period like the COVID-19 pandemic, which has serious social consequences, may bring about many other issues. People with low anxiety levels can adapt to new living conditions much easier (Karamustafaloğlu & Yumrukçal, 2011). However, people who are predisposed to anxiety can have problems coping with uncertainty (Dugas et al., 2004). People, who are having problems coping with uncertainty, are not expected to follow social unity. For that matter, the results of this study are thought to contribute in offering the necessary psychological support to strengthening the coping skills of individuals during the pandemic and in shedding a light to decision-making mechanisms.

Individuals experience more changes in their daily sleep behaviors during the COVID-19 pandemic. Sleep behaviors are known to be associated with anxiety disorders (Aysan, Karaköse, Zaybak, & İsmailoğlu, 2014; Chen et al., 2006; Morrison, 2017). The changes in sleep durations identified in the study results show that more than half of the participants either was sleeping more or less. The levels of anxiety of participants, who said that they were sleeping less, were found to be particularly higher.

Again, due to high levels of anxiety, individuals have a hard time falling asleep or they often wake up (Huang & Zhao, 2020; Şenol, Soyuer, Akça, & Argün, 2012). The findings on sleep problems experienced by participants show that nearly half of the participants were having sleeping problems. This is the reason behind the above-average levels of anxiety. As the literature suggests, one of the most important determinants of generalized anxiety disorder is sleep problems (Köroglu, 2013; Morrison, 2017). Thus, it could be noted that as anxiety levels go up, sleep problems such as having difficulty falling asleep or waking up often, will be experienced more and more.

Another result of the study is in relation to the anxiety levels of participants compared to the pre-pandemic period. Study participants were asked to identify their level of anxiety before the pandemic and many of the participants pointed out to be feeling more nervous and anxious compared to before the pandemic. The results of the study are in parallel with the high level of anxiety experienced during the pandemic. The fact that individuals feel more anxious during the pandemic compared to before is in line with the literature (Wong et al., 2007; Wu et al., 2005). Intolerance to uncertainty which was pointed out to be associated with generalized anxiety emphasizes study findings. The fact that the end date of the pandemic is unknown, different ways of transmission of the virus and news on how deadly it is (Sade, 2020) exacerbates individuals' intolerance to uncertainty. This explains why the level of generalized anxiety increases during the pandemic.

Another determinant of the level of anxiety of individuals during the COVID-19 pandemic is the relationship between sleep problems they are experiencing in this period and anxiety levels. The independent group *t* test was conducted in the study to identify the relationship between sleep problems people are experiencing during the pandemic and anxiety levels. According to statistical analyses, there is a significant difference between individuals experiencing sleep problems and the ones not experiencing sleep problems. The analysis results show that the level of anxiety of individuals who experienced sleep problems during the COVID-19 pandemic was higher. These results are in parallel with the literature on anxiety and underlines the accuracy of the results achieved in the study. It is understood that all the results obtained from the study were in parallel and in compliance with each other.

In this study conducted to identify the level of anxiety experienced by individuals during the COVID-19 pandemic, the tendencies of individuals to generalized anxiety was found to be much higher compared to their previous normal lives. A significant difference was also found between sleep problems and anxiety levels.

The results were obtained by using the data from the GAD-7 scale and the survey forms. Thus, it could be noted that the study has a limitation. It is recommended to conduct further studies and clinical observations to identify the level of generalized anxiety disorder of individuals during the COVID-19 pandemic.

It was found that individuals experienced severe sleep problems during the COVID-19 pandemic. In addition, individuals were found to be feeling more nervous and anxious compared to their normal lives. The quantitative study group consisted of individuals between the ages of 18 and 65. Further mixed studies can be conducted to improve generalizability of the results. It is widely known that it is important to act based on an approach of social unity to mitigate or prevent the impact of pandemics. Within this framework, it is important to strengthen the coping skills of individuals, who are

predisposed to generalized anxiety, during a pandemic. Therefore, it is necessary to develop policies to reduce the level of anxiety of individuals and strengthen their participation in social unity during extraordinary and unusual times, such as the pandemic.

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