

Fear of Covid-19: Associations with Trait Anxiety and Life Satisfaction

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ABSTRACT

Aim: Present study aimed to analyze perceived fear of COVID-19 among Turkish people and investigate its associations with trait anxiety and life satisfaction.

Methods: The online snowball research sampling method was used to collect data, and 1129 subjects participated in the study. As data collection tools, the Fear of COVID-19 scale, Trait Anxiety Scale, and Satisfaction with Life Scale were used. In the adaptation and validation process of the Fear of COVID-19 Scale, confirmatory factor analysis was applied. Convergent validity of the model resulting from CFA was evaluated with Average Variance Extracted (AVE) and Composite Reliability (CR) based on the factor load values. The reliability of the scale was assessed with Cronbach's alpha method. Independent samples t-test and Two-Way ANOVA analysis were used to compare the differences in the perception of fear of COVID-19, trait anxiety and life satisfaction. Multiple regression was applied to predict anxiety based on fear of COVID-19 and life satisfaction.

Results: Analyze results confirmed the unidimensionality of the 7-item scale on a Turkish sample, and the results indicated satisfactory reliability coefficients. According to independent t-test and Two Way Anova results, females, non-athletes, participants with the worry of gaining weight, who did not care about their nutrition, and who followed media news more often scored higher fear of COVID-19 and anxiety. Multiple regression analysis identified a negative correlation between fear of COVID-19 and life satisfaction and a positive correlation with anxiety.

Conclusion: Although the present study revealed the associations of the fear of Covid-19 with life satisfaction and anxiety, further research is still recommended to explore these associations in more depth.

Keywords: COVID-19; Fear; Anxiety; Satisfaction with Life; Athlete; Exercise; Adaptation

INTRODUCTION

The novel coronavirus-infected pneumonia (NCIP), occurred in Wuhan, China, in November 2019, and spread rapidly from Wuhan to other regions^{1,2,3}. As of November 26, 2020, a cumulative total of nearly 58 million cases and 1.377.395 deaths have been reported in 220 countries and five continents since the outbreak⁴. On January 31, 2020, the World Health Organization (WHO) announced that COVID-19 is a public health emergency of international significance (ABC News). "Clinical symptoms of COVID-19 include fever, cough, shortness of breath, muscle pain, headache, and diarrhea"⁵. Besides, "fatal lung injury and multiple organ failure occurred in some infected individuals"⁶. The virus is a type of coronavirus that is transmitted mainly from the person-to-person respiratory spread and contact with contaminated surfaces or objects^{7,8}. Many countries, including Turkey, have declared indefinite lockdown to reduce infection rates and prohibited overloads on health systems for preventive strategies. Staying at home and isolation have been recognized as the best preventive strategies for particularly vulnerable people (older than 65 and those with severe heart disease, chronic lung disease and diabetes)⁹.

A lockdown period was the best recommendation to stop fast-spreading infections, however the lockdown process can cause different health problems as "the onset and continuation of sudden isolation mean a radical change in the population's lifestyle"¹⁰.

During an extended stay at home, lying or sitting on the sofa, playing games on the computer, watching television, and dealing with mobile devices have become

the most common activities. On the contrary, participation in regular physical activity has decreased considerably. Staying away from regular physical exercise increases the risk of diabetes, hypertension, cardiovascular and especially respiratory diseases^{11,12,13,14}.

Recent studies on the psychological effects of lockdown and adverse psychological effects such as post-traumatic stress symptoms, fear, and anxiety have been reported¹⁵. So, changing people's lifestyles during the lockdown period and maintaining an active lifestyle at home is crucial in protecting the general population's health, especially individuals at risk^{16,17}. Physical activity and exercise show therapeutic properties that directly affect mental and physical health and are useful for most chronic diseases^{18,19,20,21}. The significant effect of physical exercise on psychological well-being has been repeatedly demonstrated in many different fields that physical exercise reduces fear, stress, and anxiety^{22,23,24,25,26,27}. The most crucial feature of exercise is its preventive/therapeutic benefits. Exercise reduces the risk of developing many diseases. Exercise is also essential among the elderly population and plays a role in preventing many diseases. In this sense, exercise positively affects and prevents body malaise, muscle wasting, loss of balance, cognitive impairment, and self-esteem in individuals.

One of the most critical factors that make us enjoy life is health. However, it is not comfortable with the existing circumstances to enjoy life with anxiety and fear for an epidemic, since "anxiety and fear associated with COVID-19 can cause social exclusion of people associated with the disease"¹⁵. Therefore, valid assessment scales are

needed to reveal the fear of COVID-19, and there is no existing Turkish measurement tool to assess the fear of COVID-19. Therefore, in the present study we aimed to adapt "The Fear of Covid-19 Scale" into Turkish. Besides, life satisfaction, fear of COVID-19, and trait anxiety have been chosen as our test parameters as they are essential factors affecting the quality of life. Since the effects of exercise differ in females and males, each parameter was determined in our study²⁸. They were chosen as criteria because of their connection with physical activity, nutrition, and unhealthy weight gain^{29,30,31}. Besides, monitoring social media and news channels regarding current pandemic status is among the factors affecting individuals' stress situation³². So, our test criteria were determined in line with this information.

MATERIAL AND METHOD

Before the applications, ethical approval of the university was obtained, and all participants filled out an informed consent form online. The inclusion criteria for participation in the study were to be over 18 and to speak Turkish.

Participants: This study was applied to a total of 1129 participants. The participants were all Turkish speakers (566 males and 563 females). Of the 1129 participants, 474 were athletes³³. The average total age of the study sample was 27.47 years (SD = 8.47). In Turkey, from April to June 2020, all weekends underwent a curfew. Some weekends were combined with public holidays, increasing the duration of the weekend to 4/5 days. On weekdays, only individuals working in public institutions were allowed to go out. Also, after March 19, 2020, All individual and team national sports and competitions were canceled. So, participants completed the online surveys between May 1 to May 15, 2020. Participants were chosen according to the snowball research sampling method⁵. The survey forms prepared online were sent to student mailing groups, and participation was ensured.

Measures

Personal Information Form: The survey collected demographic data such as gender ("male" or "female"), age (in years), home-based exercises during lockdown, ("yes" or "no"), care about nutrition during lockdown, ("yes" or "no"), worry about weight gaining during lockdown ("yes" or "no"), follow media about COVID-19 ("yes" or "no"), smoking ("yes" or "no"), chronic illness ("yes" or "no"), feeling of catching COVID-19 (from "never" to "often"), follow scientists' explanations about COVID-19 (from "never" to "often"). Finally, the participants were asked whether they were athletes or not. Some questions were asked to those who selected the option to be an athlete. These questions identified whether they complied with the required standards or not³³. Those who did not meet the required standards were placed into the non-athlete group.

Fear of COVID-19 Scale: To analyze the participants' perceived COVID-19 fear, the "Fear of COVID-19 Scale" was used³⁴. Before the application, the scale was translated into Turkish. The scale is a self-report measure with one factor and seven items anchored with a 5 Likert type scale from 1 (strongly disagree) to 5 (strongly agree). Higher scores indicate higher covid 19 fear.

State-Trait Anxiety Inventory (STAI): To analyze the

perceived anxiety level of the participants, the Turkish version of Spielberger et al. (1970)'s "State-Trait Anxiety Inventory" (STAI) was used. The scale was adapted into Turkish by Öner and Le Compte³⁵. The scale is a self-report measure and has two factors as STAI-State and STAI-Trait. The scale has 20 items anchored with a Likert-4 scale as "rarely," "sometimes," "often," and "always." Higher scores indicate higher perceived anxiety³⁶. In the present study, we only used STAI-Trait.

The Satisfaction with Life Scale: To analyze the participants' perceived satisfaction with life, the Turkish version of Diener et al (1985)'s "The Satisfaction with Life Scale" was used. The scale was adapted into Turkish by Dağlı and Baysal³⁷. The scale has five items and one factor anchored with a 5 Likert type scale ranging from 1 "strongly disagree" to 5 "strongly agree".

Translation and cultural adaptation of the "Fear of COVID-19 Scale": The translation and retranslation method was used in the linguistic adaptation of the scale. First, the scale was translated from the original language to Turkish (T1-T2) by two Turkish speaking independent translators. In the next stage, the translated versions were compared and discussed by a scientific committee, including four academic staff and the independent translators who had participated in the previous stage. The translated version of the scale (T12) was then translated back into the original language by two independent translators, and two new forms occurred (BT1-BT2). Subsequently, the scientific committee checked all the translated versions (T1, T2, T12, BT1, and BT2) concerning the original questionnaire³⁸. The approach proposed by Lawshe (1975) was taken into consideration for content validity³⁹. In line with the committee's answers, each item's Content Validity Ratio (CVR) was calculated. As a result of the calculations, it was observed that each item's CVR was 0.80⁴⁰. Each item's semantic and idiomatic equivalences were considered to obtain the final version of the Scale in Turkish (V1).

Statistical analysis: In the analyzes of the data, SPSS 26 and AMOS 22 for Windows were used. Descriptive statistics were presented as means, standard deviations, medians, quartiles, and percentages. Normality assumptions were checked by calculating skewness and kurtosis values, and outliers analyzes were done⁴¹.

In the construct validity of the scale, the confirmatory factorial analysis was used^{42,43,44}. The model was built by the maximum likelihood method and considered the following assumptions: goodness of fit index (GFI), χ^2 test, degrees of freedom, confirmatory fit (CFI), and incremental fit index (IFI), and root mean square residual (RMR). As has been previously reported in the literature, GFI, NFI, IFI and CFI $\geq .90$ and RMR $\leq .08$ were considered an indication of the acceptable fit⁴⁵. The convergent validity of the model resulting from CFA was evaluated. For the Fear of COVID-19 measurement models' convergent validity, the Average Variance Extracted (AVE) and Composite Reliability (CR) were calculated based on the factor load values. Literature suggests that AVE value from 0.50 and CR values should be greater than 0.70^{46,47}. Cronbach's alpha was used to test the reliability of the measure.

Independent samples t-test and Two-Way ANOVA analyzes were used to compare the differences between

the variables. For the Independent t-test, the effect size of the mean differences was estimated using Cohen's d "for which .20, .50, and .80 are considered small, medium, and large effects, respectively"⁴⁸. Also, for two-way ANOVA, effect sizes were calculated using eta square (η^2)⁴⁹, with .01, .06, and .14 considered small, medium, and large effects, respectively⁴⁸. To provide a more detailed overview of the extent to which the "following media about COVID-19" and "feeling of catching COVID-19" affected "fear of COVID-19", "satisfaction with life," and "trait anxiety," plotted charts were used. Furthermore, a multiple regression was applied to predict the relationships between anxiety, fear of COVID-19 and life satisfaction.

RESULTS

Table 1: Descriptive statistics of the participants (n=1129)

		All (%)	Male (%)	Female (%)	p-value
Athletes	Yes	42.00	53.50	30.40	0.000
	No	58.00	46.50	69.60	
Home-Based Exercises During Lock-Down	Yes	61.5	59.70	63.20	0.225
	No	38.5	40.30	36.80	
Care about Nutrition During Lock-Down	Yes	48.80	47.70	49.90	0.458
	No	51.20	52.30	50.10	
Worry about Weight Gaining During Lock-Down	Yes	37.40	34.50	40.30	0.042
	No	62.60	65.50	59.70	
Follow Media About COV-19	Sometimes	21.70	22.80	20.60	.373
	Often	78.30	77.20	79.40	
Smoking	Yes	31.50	35.20	27.90	0.009
	No	68.50	64.80	72.10	
Chronic Illness	Yes	6.50	5.50	7.50	0.176
	No	93.50	94.50	92.50	
The feeling of catching COV-19	Never	61.50	66.40	56.50	0.002
	Sometimes	34.70	30.70	38.70	
	Often	3.80	2.80	4.80	
Follow Scientists' Explanations About COV-19	Never	8.30	9.00	7.60	0.426
	Sometimes	53.80	54.80	52.80	
	Often	37.90	36.20	39.60	

According to the sample's socio-demographic characteristics, tables 2 and 3 show differences in fear of COVID-19, life satisfaction, and anxiety levels. Females scored higher in both fear of COVID-19 and anxiety than males. The result was similar for non-athletes compared to athletes. During the lockdown, doing home-based exercises had a positive effect on life satisfaction and reduced the anxiety scores. Doing home-based exercises also made a difference in fear of COVID-19, but Cohen's d effect values (0.13) were found to be lower than 0.20. The results were similar for caring about nutrition and worry about weight gaining during lockdown (0.12 and 0.14). Those who cared for their nutrition during lockdown had higher life satisfaction and lower anxiety. Besides, participants who were not worried about their weight had higher life satisfaction and lower anxiety. Fear of COVID-19 score was found to be higher in those who follow about

COVID-19 on media. Additionally, those who felt catching COVID-19 "often" during lockdown had higher fear of COVID-19 and anxiety scores. However, the same result was not seen at the rate of following the explanations of scientists. Plots were drawn to detailed overview interactions between the two variables (Figure 1). Participants who feel caught Covid-19 with "often" followed scientific explanations about Covid-19, fear of Covid-19, and anxiety rates increased. However, it was determined that as the follow-up rates increased, these rates decreased. Eventual, multiple regression analysis (Table 4) identified significant correlations between fear of COVID-19 ($B = .221, t = 16.32, p < .001$), life satisfaction ($B = .048, t = -16.31, p < .001$) and anxiety ($R^2 = 0.317, p < 0.01$).

Figure 1: Interactions feeling of catching COVID-19 and follow scientists' explanations about COVID-19

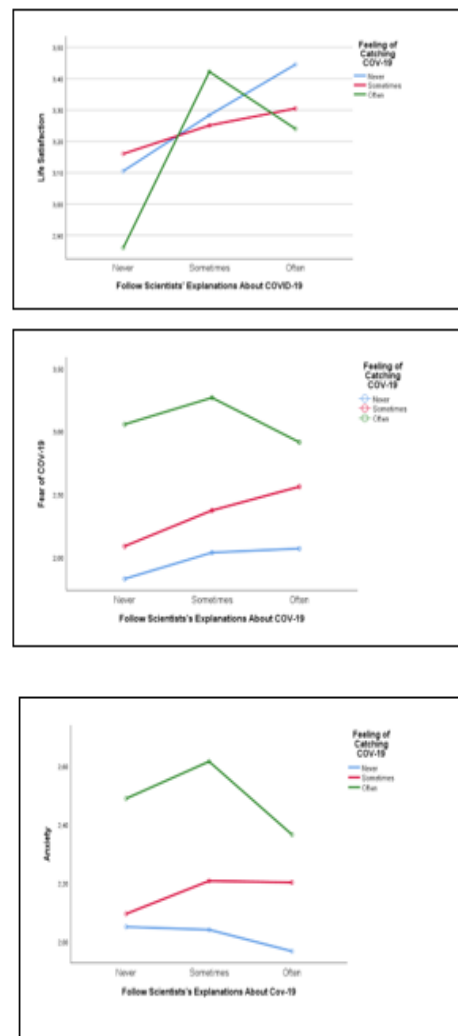


Table 2: Comparison of fear of COVID-19, life satisfaction, and anxiety in terms of study variables

	Fear of COVID-19						Life Satisfaction					Anxiety				
	N	M	SD	t	p	Cohen's d	M	SD	t	p	Cohen's d	M	SD	t	p	Cohen's d
Gender																
Male	566	2.00	.78	-8.10	<.0001	0.48	3.28	.88	-6.2	.535	0.003	2.00	.46	-6.36	<.0001	0.37
Female	563	2.41	.91				3.31	.90				2.18	.48			
Athletes																
Yes	474	2.07	.80	-4.32	<.0001	0.26	3.34	.87	1.44	.149	0.008	2.02	.46	-4.56	<.0001	0.40
No	655	2.30	.90				3.26	.91				2.15	.48			
Home-Based Exercises During Lockdown																
Yes	694	2.16	.83	-2.20	.028	0.13	3.39	.85	4.27	<.0001	0.26	2.04	.47	-4.67	<.0001	0.29
No	435	2.28	.92				3.15	.93				2.18	.48			
Care about Nutrition During Lockdown																
Yes	551	2.26	.88	2.02	.043	0.12	3.37	.89	2.82	<.0001	0.16	2.04	.47	-3.49	<.0001	0.20
No	578	2.15	.85				3.22	.89				2.14	.47			
Worry about Weight Gaining During Lockdown																
Yes	422	2.28	.86	2.25	.024	0.14	3.18	.90	-3.45	<.0001	0.21	2.19	.47	5.35	<.0001	.32
No	707	2.16	.87				3.37	.88				2.04	.47			
Follow Media About COVID-19																
Sometimes	243	2.02	.83	-3.71	<.0001	0.27	3.30	.92	.01	.987	0.001	2.10	.45	.21	.828	0.01
Often	886	2.26	.87				3.30	.88				2.09	.48			

Table 3: Two-Way ANOVA results by the feeling of catching COVID-19, follow scientists' explanations about COVID-19 and their interactions

	Fear of COV-19				Life Satisfaction				Anxiety			
	F	p	η²	Power	F	p	η²	Power	F	p	η²	Power
The feeling of catching COVID-19	38.360	0.000	0.064	1.000	0.315	0.730	0.001	0.100	21.829	0.000	0.038	1.000
Follow Scientists' Explanations About COVID-19	1.677	0.187	0.003	0.354	2.347	0.096	0.004	0.476	1.862	0.156	0.003	0.389
Feeling of catching COVID-19*Follow Scientists' Explanations About COVID-19	1.326	0.258	0.005	0.417	0.686	0.602	0.002	0.224	1.121	0.345	0.004	0.356

Table 4: Multiple regression analyzes results

Predictor	Estimate	SE	95% CI		p
			LL	UL	
Anxiety (R²=.317)					
Fear of COVID-19	.221	.014	.195	.2478	<.0001
Life Satisfaction	-.222	.013	-.248	-.196	<.0001

DISCUSSION

COVID-19 pandemic is still one of the world's most critical problems. Although there has been some progress in vaccine studies, there are still uncertain problems, such as the supply chain. Studies have shown that the Novel Coronavirus pandemic has physical damages and has mental damages^{50,51}.

In the present study, we aimed to analyze perceived fear of COVID-19 and its relationship with trait anxiety and life satisfaction by adapting the "The Fear of COVID-19 Scale"³⁴ into Turkish. The Confirmatory Factor Analyze and fit indicates confirmed the unidimensionality of the scale on a Turkish sample. Standardized factor loadings were all

significant and ranged between .51 and .79. Cronbach's alpha (.85) and the average inter-item correlations value (.47) showed good internal consistency and reliability. The AVE value was calculated as 0.47, and the CR values as 0.86^{52,53}.

In the study, the relationships between personal features and the fear of COVID-19 were analyzed. According to the analyzed results, compared to males, the fear of COVID-19 was significantly higher in females. This gender-based difference in fear of COVID19 is consistent with the literature. Previous research showed that the coronavirus pandemic causes more negative psychological effects in females⁵⁴. Besides, analyzed results showed that

the female participants' trait anxiety was also higher than male participants. When we examine the literature, we see studies that resulted in males having higher mental health than females⁵⁵.

As is known, our habits related to our health, such as physical inactivity, are one of the most important reasons for chronic diseases and the end of our lives^{56,57}. Studies showed that physical activity directly affects many aspects of our health, such as chronic heart diseases, hypertension, Type 2 diabetes, osteoporosis, colon cancer, depression, and anxiety⁵⁸. During epidemics that directly affect public health, such as the COVID-19 pandemic, developing measures to protect both the physical and mental health of the society has become a priority for scientists working in all disciplines. As stated before, many studies showed that regular physical activity reduces depression and anxiety symptoms^{59,60,61}. Consistent with the literature, present study results revealed that non-athlete participants had a higher fear of Covid-19 and trait anxiety than athletes. Supporting our result, in their study, Şenışık et al. (2020) reported that during COVID-19 lockdown, licensed athletes had healthier mental health than sedentary⁶².

According to analyzed results, we also found significant differences in the variables the fear of COVID-19, life satisfaction, and trait anxiety in favor of participants who performed home-based exercises during the lockdown period. Participants who performed home-based exercises during the lockdown period scored lower COVID-19 fear and trait anxiety; on the other hand, they scored higher in life satisfaction. So, it can be said that participants who did home-based exercises had healthier mental health and lower fear of COVID-19. Previous studies showed that physical exercise helps individuals cope with and overcome the fear of COVID-19⁶³. Studies also showed that exercise kept individuals away from stress and anxiety during the lockdown period^{64,65}. Besides, studies also put forward that exercise during the lockdown positively affected older adults' social well-being⁶⁶. According to Jiménez-Pavón et al. (2020), doing regular exercise during this period would positively affect physical and mental health, especially in older adults¹⁰.

COVID-19 affected the eating habits of individuals in many ways. Individuals who had to stay at home tried new and different types of food during their stay and moved away from the eating habits they were always used to^{67,68,69,70}. According to analyzed results, participants who cared about their nutritional habits during the lockdown period scored higher in life satisfaction and lower in trait anxiety and fear of COVID-19 than participants who did not care about their nutrition. Similarly, participants with the worry of gaining weight during the lockdown period scored lower in life satisfaction and higher in fear of COVID-19 and trait anxiety. So, it can be said that during the COVID-19 lockdown, attention to nutrition or anxiety about weight gain affects individuals' mental health by affecting their trait anxiety and fear of COVID-19 negatively. Previous research showed similar results^{71,72}.

During the COVID-19 lockdown, individuals probed the spread and the possible effects of the pandemic. Most of the news has devoted a significant proportion of its time to the COVID-19 outbreak. The symptoms of the epidemic,

ways of protection, and daily cases were monitored instantly. People were exposed to various information from different media such as TV, Twitter, and Facebook. Individuals who followed the news about the epidemic throughout the COVID-19 lockdown followed the scientists' and authorities' statements. Since there was very little information about the epidemic initially, people were exposed to much misinformation. Besides, the differences between the statements of scientists also made misunderstandings. In line with the information above, analyzed results showed that the participants who followed the media's pandemic process had higher COVID-19 fear than participants who did not follow the media. Previous studies showed that mental health was affected negatively to a certain extent among individuals who frequently followed COVID-19 news from the media^{73,74}. As individuals were exposed to news from so many different directions, they may have felt mentally unhealthy and felt sick more by looking for symptoms of COVID-19 in themselves. Although present study results showed no significant difference in the interactions between catching COVID-19 and following scientists' explanations about COVID-19 variables, the plots' results showed that both feeling of catching COVID-19 and following scientists' explanations about COVID-19 affects fear and anxiety.

Studies showed that the COVID-19 lockdown period negatively affected individuals' mental health^{75,76,77}. Present study results revealed that the fear of COVID-19 and life satisfaction are among the predictors of trait anxiety. The fear of COVID-19 and anxiety increases simultaneously. On the other hand, when life satisfaction increases, trait anxiety decreases. Current study results are compatible with the literature^{78,79,80}.

CONCLUSION AND RECOMMENDATIONS

The adverse effects of the COVID-19 are still seriously felt by humanity in many regions of the world. Governments take a wide variety of decisions to manage the process in the best way, and new restrictions are coming up every day to stop the pandemic spread more. This study was carried out with individuals who had a lockdown in the first days of the pandemic. However, with the increase in the number of cases, new quarantine applications will likely be applied. It is essential for all of us that we are in a more prepared position to protect our mental and physical health in a new quarantine or lockdown period. In this sense, in line with the present research results, we can say that being an athlete, performing home-based physical exercises, taking care of nutritional habits, and following the media impact the fear of COVID-19.

The adverse effects of COVID-19 can be reduced with exercise-based implementations⁸¹. It is useful to review our nutritional behaviors and adjust them in line with expert recommendations. Besides, the media's quality and accuracy should be reviewed carefully. It will be correct for individuals to research and confirm the information they are exposed to from the media.

Limitations and Future Studies: The present study revealed original findings of the fear of COVID-19 and relations with trait anxiety and life satisfaction; however, it is not without limitations. As the data were collected in a non-clinical sample, the results cannot be generalized to a

clinical sample. The present study was conducted with a satisfying sample; however, the results are based on self-report measures. Although the literature^{79,82,83} and present study results showed that the fear of the COVID-19 scale is valid and reliable for the Turkish population, test-retest validity was not examined in this research. Future studies may focus on different parameters and different statistical methods to understand the fear of COVID-19 and its effects on our mental health.

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