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EVALUATION OF THE RELATIONSHIP BETWEEN DEATH ANXIETY AND PERSONALITY TRAITS IN HOSPITALIZED PATIENTS WITH COVID-19

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Abstract

Objectives: Death anxiety is often described as a feeling of panic and/or fear associated with thoughts of death and the afterlife. This impact of death anxiety is often triggered by severe disease or losing someone close. The outbreak of Novel Coronavirus Disease has also affected patients mentally as well as physically. Our study aims to investigate the prevalence of death anxiety among hospitalized patients with COVID-19 and the related factors of this anxiety during the current pandemic.

Materials and Methods: We conducted a study among 283 adult participants to determine their anxiety and depression levels after being hospitalized due to COVID-19 infection by using the Ten Item Personality Inventory (TIPI), Hospital Anxiety and Depression Scale (HADS), and Templer Death Anxiety Scale (DAS).

Results: Death anxiety was significantly higher in females and in patients with prior psychiatric disorders. A positive correlation was found between death anxiety and the risk of anxiety ($p<0.001$ and $r=0.472$) and depression ($p<0.001$ and $r=0.344$). The risk of anxiety and depression was found to increase with DAS scores. Death anxiety was found to be common and associated with three significant personality traits: conscientiousness, extraversion, and emotional stability.

Conclusion: Hospitalized patients with COVID-19 should be closely monitored regarding death anxiety, and awareness should be raised regarding the mental impacts of severe diseases on patients, and these impacts should be identified more often. A professional support system of a psychological call or online guidance should be constituted to identify the affected groups that are vulnerable to mental impacts.

Keywords: Death anxiety, COVID-19, personality traits, anxiety, depression.

Introduction

Death anxiety is often referred to as "emotions like panic, fear, and/or anxiety caused by thoughts of death, disconnection from the world, and thoughts of the afterlife". However, the fields of philosophy, religion, psychology, and psychiatry could not agree upon a common description of it.[1] Death anxiety is related to many socio-demographic variables such as age, gender, educational and marital status, socioeconomic situation, general health condition, religion, cultural level, and some psychopathologies.[2]

The recent outbreak has triggered many physiologic, cognitive, and behavioral responses among the general population. These responses were generally caused by uncertainty, limited information, and the contagious nature of the disease. Individuals diagnosed with Novel Coronavirus Disease (COVID-19) also suffered from excessive stress and fear caused by the possible prognosis of the disease and physical morbidity. Longer quarantine periods, boredom, incomplete information, and social stigmatization were reported to be the origins of stress during the outbreak.[3]

Some studies reported a relationship between some of the personality traits and death anxiety. Some other studies found a positive correlation between neuroticism and death anxiety.[4,5] Additionally, death anxiety was found to have a negative correlation with extraversion, openness to experience, and agreeableness.[4,6]

Our study aims to investigate the prevalence of death anxiety among hospitalized patients with COVID-19 and the related factors of this anxiety during the current pandemic.

Materials and Methods

Study Design and Population

The population of this cross-sectional study consists of COVID-19 in-patients who were being followed between the dates of July 15, 2021, and August 15, 2021, in Ankara City Hospital. In the last three months before the study, nearly 400 patients were hospitalized due to COVID-19 per month, according to the data retrieved from computerized hospital records. The sample size was calculated by using the Epi Info program, and it was aimed to reach out to 197 people with a rate of 50% undefined frequency, 5% deviation, and 95% confidence. The study was conducted among 283 participants who were hospitalized in services due to COVID-19 between the dates of July 15, 2021, and August 15, 2021, in Ankara City Hospital, a central hospital for the pandemic. Informed consent was taken from the patients. Patients answered the questionnaires themselves via paper rather than doing it face-to-face with an authorized person to keep their distance and reduce the risk of infection. The study patients' age range was between 18 and 65 years. We have followed these patients due to

COVID-19 in pandemic units and these patients managed to fill out the questionnaire completely. Patients over 65 years, intensive care unit patients, and illiterates were excluded from the study.

Data Collection Tools

In our research, we benefited from the Personal Information Form, Ten Item Personality Inventory (TIPI), Hospital Anxiety and Depression Scale (HADS), and Templer's "Death Anxiety Scale" (DAS).

Personal information form had data on the patient's age, educational and marital status, chronic diseases, COVID-19 vaccine details, history of COVID-19 infection, alcohol consumption, smoking status, presence of any psychiatric disease, and the use of any psychiatric medicine at the time of hospitalization. The patients were also asked to specify their illness severity from the least severe (1) to the most severe (10) and their sleep quality from the worst (1) to the best (10).

Gosling et al. (2003)[7] developed a 10-item inventory called TIPI, which was later adapted to Turkish by Atak (2013).[8] The 10-item inventory has five critical personality traits. These five dimensions of personality are: 1) openness to experience, 2) conscientiousness, 3) extraversion, 4) agreeableness, and 5) emotional stability. The inventory is a Likert-type scale and has the following options: 1=disagree strongly to 7=agree strongly. The Cronbach's Alpha reliability coefficient for the sub-dimensions was reported to range from 0.81 to 0.86 in its adaptation study, which meant that the inventory's reliability was acceptable, and in our study, it was found to be 0.62.

HADS was developed by Zigmond and Snaith (1983)[9], and its reliability and validity analysis was carried out by Aydemir et al. (1997).[10] The HADS is used to evaluate the symptoms of anxiety and depression in hospitals and is filled out by the patients. It is a four-point Likert-type scale with a total of 14 questions, 7 (odd numbers) of which analyze the risk of anxiety, and the remaining 7 (even numbers) analyze the risk of depression. The cut-points were ≥7 for the depression subscale and ≥10 for the anxiety subscale. The Cronbach alpha coefficient was reported to be 0.85 and 0.77 in the anxiety and depression subscales, respectively. Whereas, in our study, it was reported to be .82 and 0.72, respectively.

Templer (1970)[11] developed a 15-item inventory called DAS, which was later adapted to Turkish by Şenol (1989). As a result of the validity and reliability analysis conducted by Akça and Köse (2008), test-retest reliability was found to be 0.79, while the reliability coefficient calculated by using the Kuder-Richardson formula was found to be 0.75.[12] In our study, Cronbach alpha coefficient was reported to be 0.60. The scale is a 15-item, true/false, two-point Likert-type scale that is used to determine the degree of death anxiety. True answers get 1 point, and false answers do not get any points. The scale has a point range of between 0 to 15,

and higher points mean an increase in death anxiety. Seven points out of a point range of 0 to 15 indicate high rates of death anxiety.[12]

Data Analysis

We used Statistical Package for the Social Sciences (SPSS) version 23.0 (IBM Corp., Armonk, New York, USA) to analyze data. Basic descriptive statistics and frequencies were used for the description of all variables. Mean ± standard deviation, median, ranges (minimum value–maximum value), and numbers (%) were used to express the results and the usage depended on whether the data was parametric or non-parametric. The chi-squared test was used to compare the quantitative data. The t-test was used to examine the comparison of means between two groups for normally distributed data and the Mann- Whitney U Test was used for the non-normally distributed data. ANOVA was used for normal distributions and the Kruskal-Wallis test (post-hoc Dunn-Bonferroni test) for non-normal distributions. The statistical significance level was $p<.05$. Correlation analyses were conducted for two statistically significant variables. Logistic regression models were carried out to analyze the relationship among independent variables, such as demographic characteristics, psychiatric disease history, personality traits, and risk of anxiety and depression and to calculate the odds ratio (OR) and confidence interval (CI).

Ethical Issues

Approval was taken from the local Ethics Committee. The study patients were informed about the aim of the study and voluntarily signed informed consent.

Results

Of all the patients (n=283), 57.95% (n=164) were male, and 42.05% (n=119) were female. The mean age was 48.22±10.57. Of all the patients, 22.26% had a COVID-19 vaccine, 20.49% (n=58) previously had COVID-19 infection, and 15.55% (n=44) had lost someone due to COVID-19 and related complications. Of the participants, 11.31% had a prior diagnosis of a psychiatric disorder and 9.89% (n=28) were still on prescribed psychiatric medicine. The demographical and clinical data of the patients are shown in Table 1.

Table 1. Demographical and clinical data of the patients (n=283)

		n	%
Gender	Male	164	57.95
	Female	119	42.05
Marital Status	Married	222	78.45
	Single	28	9.89
	Divorced	16	5.65
	Widowed	17	6.01
Educational Status	Literate	20	7.07
	Primary School	86	30.38
	High School	60	21.21
	University	91	32.15
	MBA and higher	26	9.19
Chronic Diseases	Existent	108	38.17
	Non-existent	175	61.83
COVID-19 Vaccine	Vaccinated	63	22.26
	Unvaccinated	220	77.74
Previous COVID-19 Infection	Yes	58	20.49
	No	225	79.51
Lost someone due to COVID-19	Yes	44	15.55
	No	239	84.45
History of a mental disorder	Yes	32	11.31
	No	251	88.69
Current psychiatric treatment	Yes	28	9.89
	No	255	90.11

The mean disease severity and sleep quality of the patients were 6.86±2.44 and 4.49±2.51, respectively. Of our patients, 58.29% (n=165) had a high rate of death anxiety and 57.24% (n=162) had a high risk of depression. Table 2 demonstrates the scores for the perceived severity of the disease, sleep quality, risk of anxiety-depression, death anxiety, and personality traits of the cases.

Death anxiety was found to be significantly higher in females than in males ($p<0.001$). Patients with prior psychiatric disorders were found to have higher death anxiety compared to those without a history of any psychiatric disorder ($p=0.026$). No significant difference was found between death anxiety and age ($p=0.269$), education status ($p=0.088$), presence of chronic disease ($p=0.212$), vaccination ($p=0.511$), and history of having COVID-19 infection ($p=0.09$). Similarly, no significant difference was found between death anxiety and the loss of someone due to COVID-19 infection ($p=0.344$), psychiatric medicine use ($p=0.944$), perceived severity of disease ($p=0.546$), and sleep quality ($p=0.271$) (Table 3).

Table 2. Age, perceived disease severity, sleep quality, risk of anxiety-depression, death anxiety, and personality traits of the participants (n=283)

	n	%	Mean ± Standard Deviation	Median (min-max)
Age			48.22 ± 10.57	50 (19-65)
Disease Severity			6.86 ± 2.44	7 (1-10)
Sleep Quality			4.49 ± 2.51	4 (1-10)
Templer DAS Scale Score			7.51 ± 3.47	7 (1-15)
Low	118	41.71	4.19 ± 1.46	4 (1-6)
High	165	58.29	9.87 ± 2.36	9 (7-15)
HADS Anxiety Risk			7.19 ± 4.25	7 (0-19)
Yes	79	27.92	12.57 ± 2.42	12 (10-19)
No	204	72.08	5.11 ± 2.72	5 (0-9)
HADS Depression Risk			7.04 ± 3.96	7 (0-20)
Yes	162	57.24	9.79 ± 2.67	9 (7-20)
No	121	42.76	3.36 ±1.81	3 (0-6)
Extraversion			9.78 ± 3.14	10 (2-14)
Agreeableness			10.57 ± 2.68	11 (2-14)
Conscientiousness			11.27 ± 2.92	12 (2-14)
Emotional Stability			9.82 ± 2.78	10 (2-14)
Openness to experiences			8.71 ± 2.67	8 (2-14)

Table 3. Comparison of socio-demographic characteristics regarding low and high death anxiety (n=283)

		Low Death Anxiety n (%)	High Death Anxiety n (%)	p
Gender	Male	80 (48.78)	84 (51.22)	0.005
	Female	38 (31.93)	81 (68.07)	
Marital Status	Married	90 (40.54)	132 (59.46)	0.452
	Single	28 (45.89)	33 (54.11)	
Educational Status	Literate	3 (15)	17 (85)	0.088
	Primary School	34 (39.53)	52 (60.47)	
	High School	26 (43.33)	34 (56.67)	
	University	41 (45.05)	50 (54.95)	
	MBA and higher	14 (53.85)	12 (46.15)	
Chronic Disease	Existent	40 (37.04)	68 (62.96)	0.212
	Non-existent	78 (44.57)	97 (55.43)	
COVID-19 Vaccination	Yes	24 (38.09)	39 (61.91)	0.511
	No	94 (42.73)	126 (57.27)	
Previous COVID-19 Infection	Yes	18 (31)	40 (69)	0.090
	No	100 (44.4)	125 (55.6)	
Lost someone due to COVID-19	Yes	15 (34.09)	29 (65.91)	0.344
	No	103 (43.09)	136 (56.91)	
History of a mental disorder	Yes	7 (21.87)	25(78.13)	0.026
	No	111 (44.22)	140 (55.78)	
Current psychiatric treatment	Yes	11 (39.29)	17 (60.71)	0.944
	No	107 (41.96)	148 (58.04)	
		Median (min-max)	**Median (min-max)**	**p**
Age		49 (23-65)	50 (19-65)	0.269
Disease Severity		7 (1-10)	7 (1-10)	0.546
Sleep Quality		5 (1-10)	4 (1-10)	0.271

A positive correlation was reported between death anxiety and the risk of anxiety ($p<0.001$ and $r=0.472$) and depression ($p<0.001$ and $r=0.344$). The risk of anxiety and depression was found to increase with DAS scores.

No significant difference was found between death anxiety and agreeableness ($p=0.57$) and openness to experiences ($p=0.16$) regarding the relationship between death anxiety and personality traits determined by TIPI; however, a significant relationship was found between death anxiety and the other three traits (conscientiousness, extraversion, and emotional stability), and thus a correlation analysis was conducted. As a result of the analysis, death anxiety was reported to decrease with increasing extraversion ($p=0.002$, $r=-0.215$), conscientiousness ($p<0.001$, $r=-0.292$), and emotional stability ($p=0.007$, $r=-0.231$) (Table 4).

Table 4. Relationship between death anxiety and personality traits (n=283)

Personality Traits	**r***	**p**
Extraversion	-0.215	<0.001
Agreeableness	-0.034	0.571
Conscientiousness	-0.292	<0.001
Emotional stability	-0.231	<0.001
Openness to experiences	-0.083	0.163

(*Spearman correlation)

Of the study population, 57.24% (n=162) and 27.92% (n=79) scored above the depression cut-off point and the anxiety cut-off point regarding HADS cut-off points, respectively. Females were found to have higher mean anxiety ($p=0.002$) and mean depression scores ($p=0.016$) when compared to males. No significant difference was found between anxiety and depression scores and age ($p=0.31$), educational status ($p=0.091$), presence of chronic diseases ($p=0.18$), and history of losing someone due to COVID-19 ($p=0.36$). No significant relationship was found between the perceived severity of disease and anxiety ($p=0.48$) and depression ($p=0.37$) scores; however, a statistically significant relationship and a negative correlation were found between sleep quality and the scores of anxiety ($p=0.001$, $r=-0.190$) and depression ($p=0.005$, $r=-0.168$). No significant relationship was found between depression scores and prior psychiatric disorder history and current psychiatric medication use, and the patients with prior history of a psychiatric disorder ($p=0.011$) and those who were still on psychiatric medicine ($p=0.021$) were found to have higher anxiety scores.

The scores for anxiety were found to decrease with the increase in the following traits: agreeableness ($p=0.003$, $r=-0.173$), extraversion ($p<0.001$, $r=-0.306$), conscientiousness ($p<0.001$, $r=-0.444$), and emotional stability ($p<0.001$, $r=-0.433$). No significant relationship was found between openness to experiences and anxiety scores. All of the subscales of these personality traits were found to have a significant relationship with depression risk. Depression scores were reported to decrease with the increase in the following traits:

agreeableness (p=0.004, r=-0.170), extraversion (p<0.001, r=-0.341), conscientiousness (p<0.001, r=-0.376), emotional stability (p<0.001, r=-0.351), and openness to experiences (p=0.001, r=-0.195).

Logistic regression analysis was carried out for the anxiety risk factors and revealed that the female gender (OR = 1.930, 95% CI 1.055–3.530, p=0.033) increased the anxiety risk, and the risk of anxiety decreased with an increase in conscientiousness (OR = 0.780, 95% CI 0.702–0.868, p<0.001), emotional stability (OR = 0.790, 95% CI 0.698–0.894, p<0.001), and sleep quality (OR = 0.858, 95% CI 0.755–0.976, p<0.001) (Table 5). Logistic regression analysis was done for the risk factors for depression and revealed that the increase in conscientiousness (OR = 0.859, 95% CI 0.768–0.961, p=0.008), emotional stability (OR = 0.882, 95% CI 0.792–0.983, p=0.023), extraversion (OR = 0.835, 95% CI 0.756–0.921, p<0.001), and sleep quality (OR = 0.882, 95% CI 0.792–0.981, p=0.021) decreased the depression risk. Contrary to its effect on anxiety risk, gender was found to have no effect on depression (Table 6).

Table 5. Risk factors for anxiety

Risk Factors	**OR (%95 CI)**	**p-value**
Gender		
Male	1 (reference)	0.033
Female	1.930 (1.055-3.530)	
Sleep Quality	0.858 (0.755-0.976)	0.020
Emotional Stability	0.790 (0.698-0.894)	<0.001
Conscientiousness	0.780 (0.702-0.868)	<0.001

Table 6. Risk factors for depression

Risk Factors	**OR (%95 CI)**	**p-value**
Sleep Quality	0.882 (0.792-0.981)	0.021
Emotional Stability	0.882 (0.792-0.983)	0.023
Conscientiousness	0.859 (0.768-0.961)	0.008
Extraversion	0.835 (0.756-0.921)	<0.001

Discussion

Death anxiety is common, and it is triggered by incidents associated with death. An uncertain period started with the pandemic, and since then, people have been feeling insecure about their health and safety.[13] Our study aims to investigate the relationship among death anxiety, personality traits, anxiety, and depression risks of the adults who needed treatment after being hospitalized due to COVID-19 infection during the pandemic. We reported high death anxiety rates in more than half of our patients. In their comparative study, Cağlar and Kaçer reported that followed COVID-19 in-patients had a death anxiety rate as high as myocardial infarction patients.[14] In our study, we reported higher rates of death anxiety among females when compared to males

who had been supported by previous studies.[2,5,15] Females are usually getting more affected by stress hormones and they are not likely to use adaptive coping strategies. They have a higher tendency to make negative evaluations during emergencies.[15] These are the factors that contribute to the differences between genders. Additionally, this finding also can be explained by gender roles in society and that it is more acceptable for women to express their emotions (sadness, fear, etc.) in society, whereas men are generally taught to suppress their emotions. In the literature, death anxiety was reported to decrease with younger age, higher level of education, and better physical and psychological health[4]; however, our study surprisingly did not find any significant differences between these variables and death anxiety. Our study did not report any significant differences between age and death anxiety, this might be because COVID-19 affects all age groups and younger age is not a protective factor. Death anxiety and various psychiatric disorders (e.g., anxiety, depression, schizophrenia) were found to have a significant relationship in some studies in the literature.[16,17] There is data on various mental disorders having high and low death anxiety rates. Death anxiety is accepted to be the main fear that underlies the development, progress, and course of many mental situations.[18] So, it is not surprising that we found increased death anxiety in those who had a prior psychiatric disease.

During the pandemic, studies in the literature reported a relationship between poor sleep quality and depression and anxiety.[19] Similarly, the multivariate logistic regression model that we conducted has revealed an increase in sleep quality with a decrease in depression and anxiety risk. During the pandemic, it might be helpful to use cognitive-behavioral techniques like suggestions for helping to stay calm before bedtime, the awareness of the negative results of sleeplessness, and finding alternative thoughts.

Previous studies showed that some personality traits strengthen or sensitize people against stress and the benefits or disadvantages of stress.[20] Our study also reported that some personality traits were related to increased death anxiety and that death anxiety decreased when the following traits increased: extraversion, conscientiousness, and emotional stability. Individuals with neuroticism experience sudden changes in their emotional states, and people without neuroticism has emotional stability. A personal trait, neuroticism, is characterized by emotional instability, nervousness, sadness, and anxiety. So, the awareness of death might be more triggering for many who are more neurotic as they generally feel more anxious and become sad more easily.[9] Emotionally unstable people (individuals with high neuroticism) were considered to show increased emotional reactivity because of their maladaptive coping strategies such as avoidant coping.[20] Conscientiousness is believed to be associated with the increase in the ability to manage and tolerate stress and avoid stress.[21] High levels of conscientiousness were associated with better-perceived health, higher life satisfaction, and positive impact.[22] So, our finding regarding the association between high conscientiousness levels and decreased death anxiety was not surprising. In a study conducted among university students in Turkey by Yıldız and Bulut in 2017, no significant relationship was found between conscientiousness and death anxiety.[5] In the same study, a negative relationship was reported between openness to experiences and death

anxiety[5], in our study, however, we did not find any statistically significant association between these two variables. People with high openness to experiences have high adaptability to new social environments and they easily accept new ideas. A dissertation research reported a weak, negative correlation between openness to experiences and death anxiety, relatedly, these people were found to get lower scores in the death anxiety questionnaires due to being more liable to discover abstract concepts.[23] Introverted neurotic individuals were reported to have higher death anxiety when compared to extroverted neurotic individuals due to being more inclined to overthink past and future events.[24] Our result is compatible with this literature finding regarding decreasing death anxiety with increasing extraversion.

In dynamic models, depressive disorders are associated with more than one trait. Each personality trait is associated with depression in different ways.[25] In our study, three out of five personality traits (emotional stability, extraversion, and conscientiousness) were specifically found to be a predictive factor for depressive mood. The most examined trait, neuroticism, was a risk factor for depressive mood, while conscientiousness and extraversion were protective factors toward depressive mood. Conscientiousness was considered to trigger depression by increasing exposure to negative life events.[25] Naragon-Gainey et al. found a relationship between social anxiety symptoms and four personality traits of extroverts (ascendance, sociability, positive emotionality, fun-seeking) whereas only low positive emotionality was found to have a strong relationship with the severity of depressive symptoms.[26]

Stressful conditions such as the coronavirus pandemic have a mechanism of "resilience," which creates an association between personality and psychological functionality.[27] For example, conscientiousness can have a positive effect on people's mood by making people get social support more often and by providing adaptiveness and extroversion and it can also affect all components of high durability through flexible coping. In a study investigating whether personality traits were predictors of durability, agreeableness and openness to experiences were found not to be the significant predictors of Resilience.[28] Similar to the findings in the literature[29], we also believe that agreeableness and openness to experiences are not predictors of depressive mood, which can be explained by the concept of "Resilience".

In a study evaluating anxiety levels in the Turkish population during the COVID-19 pandemic, females were found to have higher anxiety levels than males.[30] In our study, multivariable logistics regression analysis found a higher risk in females than in males regarding the development of anxiety. Among the reasons for this finding were biological reasons and woman's gender role in society.

The limitations of our study were: the lack of healthy controls, the evaluations upon subjective perceptions rather than objective clinical classifications regarding the variables, such as patients' disease severity and sleep quality, and the inability to carry out face-to-face interviews for questionnaires. We believe further studies

should be carried out among larger sample groups that evaluate anxiety during challenging conditions caused by the COVID-19 pandemic and examine the individuals regarding "resilience" and "coping styles" along with their personality traits. Our study is the first study in the literature that analyzes the relationship between the personality traits in patients hospitalized due to COVID-19 infection and death anxiety.

As a result, death anxiety was found to be high among our study population. Death anxiety might be a triggering factor in many different mental disorders during the COVID-19 pandemic. So, death anxiety coping strategies are recommended to be included in mental health programs for patients with COVID-19. Death anxiety was found to decrease with cognitive-behavioral therapy. Further studies are needed to analyze whether long-term results are successful and whether progression has come to a halt in vulnerable populations. More evaluation tools should be developed, and training is necessary for the awareness and management of the mental impacts of COVID-19 in society. A professional support system like mental health helpline or online guidance should be constituted to identify and help the mentally vulnerable groups during the pandemic.

Data Availability Statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy and ethical restrictions.

Ethical Considerations: The study complied with the Declaration of Helsinki and was approved on July 14, 2021, with an approval number of E221-587 by the Republic of Turkey Ministry of Health, the Institutional Review Board of the Ankara City Hospital, and the Ethics Committee of the Ankara City Hospital.

Conflict of Interest: The authors have no conflicts of interest to declare. There are no external funding sources for this study.

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