



Depression as a mediator between fear of COVID-19 and death anxiety

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Abstract

The COVID-19 pandemic has affected the world deeply and an increase in psychological distress have been observed in globally. Therefore, investigation of the psychological problems associated with the COVID-19 has become an important research area. Accordingly, this study aimed to examine the relationships among Fear of COVID-19 (FoC), depression, and death anxiety. Further, the study investigated the mediating role of depression in the relationship between FoC and death anxiety. The “Fear of COVID-19 scale”, “Depression Scale” and “Death Anxiety Scale” were used to collect data from 372 emerging adults aged between 18 and 25 years. The results indicated that FoC was a positive and significant predictor of both depression and death anxiety. The results further indicated that depression was a positive and significant predictor of death anxiety. Depression partially mediated the relationship between FoC and death anxiety. The findings suggested that the FoC may trigger depression and death anxiety, and therefore, preventive measures should be more emphasized. The findings have implications for mental health professionals and practitioners in counseling.

Keywords Death anxiety · Depression · Fear of COVID-19

Introduction

The world is under the attack of a coronavirus, which first appeared in Wuhan, China, in December 2019 (Huang et al., 2020; Hui et al., 2020). The COVID-19 virus has rapidly spread to all seven continents and 187 countries since March 2020 (WHO, 2020) and caused tremendous anxiety and fear in the world (Asmundson & Taylor, 2020; Lee, 2020; Taylor et al., 2020). Thereby, it has been declared as a pandemic by the “World Health Organization” as of March 2020 (WHO, 2020). This resulted in several restrictions in all aspects of life (e.g., eating habits, education, travelling, social life, etc.).

Due to the negative impact of COVID-19 on both the physical and mental health of individuals, most countries

in the world have faced a state of emergency (Evren et al., 2020; Feng et al., 2020). The COVID-19 has introduced psychological distress on persons of all ages (Zhang et al., 2020). The anxiety and fear caused by this disease has been named as “fear of COVID-19” (FoC) (Ahorsu et al., 2020; Haktanir et al., 2020; Mertens et al., 2020; Nguyen et al., 2020). Fear of COVID-19 may have various negative psychological consequences (e.g., anxiety, phobia, and depression) (Arpaci, Karatas, et al., 2021; Arpaci, Seong, et al., 2021; Sun et al., 2020; Tanhan, 2020).

It is a fact that the long duration of the COVID-19 pandemic negatively affects not only the physical health of individuals, but also their mental health (Tanhan et al., 2021; Wirkner et al., 2022). In the prior literature, the fear of COVID-19 has been the subject of research in various people of age groups (Gundogan, 2021; Wright et al., 2021). However, none of the studies have examined mediating role of depression in the relationship between FoC and death anxiety yet. Accordingly, the present study aimed to examine the relationships among FoC, depression, and death anxiety by focusing on the mediating role of depression between the FoC and death anxiety.

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Theoretical Background and Hypotheses

Fear of COVID-19 (FoC)

It has been argued that FoC is a factor that triggers mental problems and causes individuals to experience these mental problems more intensively (Kang et al., 2020; Neto et al., 2020; Pfefferbaum & North, 2020; Sun et al., 2020; Xiao, 2020). Prior studies on FoC concluded that this fear is positively correlated with psychological problems (Casagrande et al., 2020; Chew et al., 2020; Mertens et al., 2020; Shevlin et al., 2020; Zhang et al., 2020). Likewise, it has been argued that fear of COVID-19 is a positive and significant predictor of depression (Bakioğlu et al., 2020; Satıcı et al., 2020). Therefore,

H1. The FoC is a significant predictor of depression.

Death Anxiety

Death anxiety is a concept related to stimuli reminding of death, anxiety about death or the imagination, image or attitude that occurs in the mind about what happens after death (Dadfar et al., 2018). It is argued that death anxiety is a basic fear in each individual and is one of the main components of individuals' existential beliefs (Neimeyer, 1994; Yalom, 2008). Death anxiety has emotional, behavioral, motivational and cognitive dimensions (Lester, 2015). Death anxiety is considered a fundamental fear underlying the development and continuation of various psychological distress (MacLeod et al., 2019).

Death anxiety increases in individuals by witnessing the death of someone close to death or a death incident, as well as when the mortality rate of people in their close surroundings increases or when people are threatened by a fatal serious epidemic (Menzies & Menzies, 2020). Previous studies have concluded that FoC is an important predictor of death anxiety (Habiboğlu et al., 2021; Lee et al., 2020). Thereby, it can be argued that death anxiety is increasing in individuals due to the COVID-19, which has already caused numerous deaths worldwide (Worldometer, 2022). Accordingly, it is proposed that FoC is a positive and significant predictor of death anxiety (Menzies & Menzies, 2020). Therefore,

H2. The FoC is a significant predictor of death anxiety.

Moreover, it has been noted that depression increases the thought of death and suicidal tendency among individuals (Abdel-Khalek, 2002; Brubeck & Beer, 1992). Previous studies indicated that depression is positively

correlated with death anxiety (Eshbaugh & Henninger, 2013; Hintze et al., 1993; Sridevi & Swathi, 2014). Accordingly, it is argued that depression is a positive and significant predictor of death anxiety (Brown, 2011; Chang, 2011). Therefore,

H3. Depression is a significant predictor of death anxiety.

Mediating Role of Depression

Yalom (2008) stated that anxiety or the phenomenon of meaninglessness experienced by individuals may trigger depression, and the state of depression may cause various anxieties such as fear and anxiety of death associated with existential loneliness. In other words, it can be said that the fearful situations experienced by individuals may lead to depression and depression may cause various anxieties (Yalom, 2008). Thereby, it can be claimed that the FoC may trigger depression, which may cause various anxieties (e.g., death anxiety, existential anxiety, etc.) in individuals. In this regard, the present study focused on depression as a mediator between FoC and death anxiety.

Three specific concepts were proposed to explain depression; cognitive triad, schemas, and cognitive mistakes (Beck, 1979). According to the depression model, cognition is the main cause of affective disorders such as anxiety and depression (Beck, 1993). As a result of depression, individuals have negative and pessimistic thoughts about themselves and their future (Beck, 1967). Thus, it can be argued that the fearful situations experienced by individuals are the key factors that lead to depression when individuals attribute wrong meanings to them, and that depression triggers the individuals' pessimistic thoughts (Beck, 1993). In this context, it can be concluded that the FoC may cause depression, which triggers individuals' negative thoughts and death anxiety. Accordingly,

H4. Depression moderates the relationship between the FoC and death anxiety.

Method

Research Design

The present study is a "correlational study" which uses structural equation modelling analysis to find the relationships between FoC, depression and death anxiety. Correlational studies examine correlations between two or more variables without an intervention (Fraenkel et al., 2012).

Participants and Procedure

The FoC (Nguyen et al., 2020), depression (Losiak et al., 2019), and death anxiety (Eshbaugh & Henninger, 2013; MacLeod et al., 2019) are common psychological problems in young adults. Thus, participants for the present study were selected from among young adults by using a convenience sampling method. The study group was comprised of 372 (240 females and 132 males) emerging adults. Participants are individuals between the ages of 18 and 25 selected from different regions of Turkey (mean age = 22.32, SD = 3.63). Further, 85 participants were diagnosed with COVID-19.

Ethical approval of the current study was obtained from the ethics committee. A data collection tool built in Google Forms, which was distributed to the participants via social media applications. At the beginning of the form, they were asked to sign a participation consent form. The online data collection tool was distributed to 500 respondents, however, 405 of them completed the survey. There were 33 forms with missing values and the data analysis were carried out by using the rest 372 forms.

Measures

The Fear of COVID-19 Scale (FCS) Ahorsu et al. (2020) developed the FCS to measure the states of anxiety and fear stemming from the COVID-19. The FCS is a seven-item and single factor scale. The adaptation of the scale to the Turkish was performed by Satici et al. (2020). Cronbach's alpha coefficient of the adapted scale was reported as 0.87. Moreover, the model fit indices were in acceptable range: [GFI = 0.936; SRMR = 0.061; IFI = 0.915; NFI = 0.912; CFI = 0.915]. In the current study, the model fit indices of the FCS were also in acceptable range: [$\chi^2/df = 1.44$, AGFI = 0.97, GFI = 0.98, CFI = 0.99, TLI = 0.99, IFI = 0.99, RMSEA = 0.03]. Moreover, Cronbach's alpha coefficient was calculated as 0.84.

DSM-5 Depression Scale (DDS) DDS is a nine-item scale that determines depressive symptoms of the individuals during the last seven days. The DDS developed by Sücüllüoğlu-Dikici et al. (2017) to measure level of depression according to the DSM-5 criteria. Cronbach alpha coefficient of the original scale was reported as 0.75 and Spearman-Brown reliability coefficient was reported as 0.76. In the current study, Cronbach's alpha coefficient was calculated as 0.85. Further, the CFA results indicated a good model fit: [$\chi^2/df = 2.73$, AGFI = .92, CFI = 0.96, GFI = 0.96, IFI = 0.96, TLI = 0.94, RMSEA = 0.06].

Abdel-Khalek Death Anxiety Scale (ADS) ADS was developed by Abdel-Khalek (2004) in Arabic and English to measure death anxiety in individuals. The scale consists of 20 items and five factors. Saricicek-Aydoğan et al. (2015) adapted the

ADS to Turkish culture. They reported the Cronbach's alpha values to be 0.86, 0.86, 0.85, 0.86, and 0.90 for each dimension. In the current study, the Cronbach's α coefficients were calculated as 0.88, 0.79, 0.75, 0.71, and 0.70 respectively. Abdel-Khalek (2004) found the Cronbach alpha value of the total scale as 0.86. Whereas in the current study, Cronbach's alpha coefficient of the total scale was calculated as 0.92. Further, the (Confirmatory Factor Analysis) CFA results indicated a good model fit: [$\chi^2/df = 2.53$, GFI = 0.99, AGFI = 0.96, TLI = 0.98, IFI = 0.99, CFI = 0.99, RMSEA = 0.06].

Results

Preliminary Analysis

The correlations among the variables were found to be lower than 0.90, which suggested the absence of multicollinearity problem (Pallant, 2013). Kurtosis and skewness values were within -1.5 and +1.5, indicating a normal distribution. It is emphasized that prior to the hypothesis testing, a CFA should be conducted to test the measurement models along with the structural model (Kline, 2015). Thereby, the CFA were conducted by using SPSS AMOS (ver. 22) and model fits were evaluated based on the following criteria proposed in the literature; $\chi^2/df < 3$, AGFI ≥ 0.85 , TLI, GFI, IFI, CFI ≥ 0.90 , and RMSEA ≤ 0.08 (Tabachnick & Fidell, 2013).

Model fit indices for the measurement models suggested a good model fit. Further, the values obtained for the structural model yielded an adequate fit: [$\chi^2/df = 2.29$, AGFI = 0.86, TLI = 0.92, GFI = 0.90, IFI = 0.93, CFI = 0.93, RMSEA = 0.05]. Table 1 shows the normality, reliability, and correlation analysis results. Moreover, no significant difference in the variables was found between the participants who were diagnosed with COVID-19 and those who were not ($t = 4.35$, $p > 0.05$). Therefore, the main analysis was conducted for all

Table 1 Correlations, skewness, kurtosis, and reliability coefficients

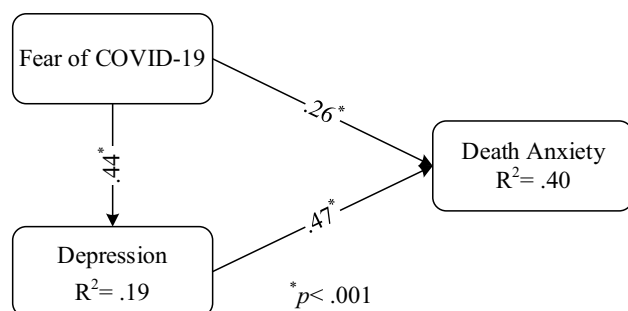
Factor	1	2	3
1. Depression	1		
2. Fear of COVID-19	0.44**	1	
3. Death Anxiety	0.45**	0.54**	1
Cronbach's alpha	0.85	0.84	0.92
Total Variance Explained	58.61	67.82	68.04
Min	0	7	20
Max	26	32	99
Mean	10.86	17.51	52.44
Standard deviation	5.82	5.19	15.99
Skewness	0.43	0.24	0.310
Kurtosis	-0.34	-0.04	-0.084

** $p < 0.01$

Table 2 Hypotheses testing results

	β	B	SE $_{\beta}$	p
FoC → Depression	0.44	0.49	0.03	***
FoC → Death Anxiety	0.47	0.34	0.05	***
Depression → Death Anxiety	0.26	0.17	0.05	***
FoC → Depression → Death Anxiety	0.11	0.05	0.02	***

*** $p < 0.001$ (β = Standardized Estimate, B = Estimate, SE = Standard Error)

**Fig. 1** The structural model with standardized estimates

participants. Moreover, no age or gender differences were found in the study variables.

Hypothesis Testing Results

A structural equation modeling (SEM) approach was employed to test hypothesized relationships. Table 2 indicated that fear of COVID-19 was a positive and significant predictor of depression ($\beta = 0.44$; $p < 0.001$; 95% CI [0.38; 0.50]). Thereby, H1 was supported. The results revealed that FoC was a positive and significant predictor of death anxiety ($\beta = 0.47$; $p < 0.001$; 95% CI [0.38; 0.55]). Thus, H2 was supported. The results further indicated that depression is a positive and significant predictor of death anxiety ($\beta = 0.26$; $p < 0.001$; 95% CI [0.17; 0.36]). Therefore, H3 was supported. Moreover, the results showed that depression was partially mediated the association between FoC and death anxiety ($\beta = 0.11$; $p < 0.001$; 95% CI [0.07; 0.16]). Thus, H4 was also supported.

Figure 1 indicates that fear of COVID-19 explained 19% of the variance in depression. Whereas the FoC and depression together explained 40% of the variance in death anxiety.

Discussion and Conclusion

Mental and physical health of the people have been negatively affected during the COVID-19 pandemic (Arpaci, Karatas, et al., 2021; Arpaci, Seong, et al., 2021; Zhang

et al., 2020). Hsieh et al. (2021) reviewed the studies on mental health problems from SARS to COVID-19. They concluded that SARS epidemic and COVID-19 pandemic not only negatively impacted psychological wellbeing in general public, but also negatively impacted mental health of the individuals and their family. Up-to-date none of the studies has been focused on mediating role of depression in the relationship between FoC and death anxiety. Therefore, the study focused on exploring the role of depression as a mediator between the FoC and death anxiety.

The results indicated that FoC is a positive and significant determinant of depression. This was supported by the previous findings (Bakioğlu et al., 2020; Satici et al., 2020). The studies reported that FoC has caused psychological distress (Feng et al., 2020). In a recent study, Erbicier et al. (2022) have conducted a meta-analysis to investigate correlations among FoC, anxiety, depression, and stress. Their findings indicated a strong correlation between the FoC and anxiety and moderate correlations between the FoC, depression, and stress. In another study, Sanwald et al. (2022) focused on primary emotions (i.e., play, sadness, and seeking) as determinants for the fear of COVID-19 in former inpatients with healthy control and major depressive disorder. Their results indicated that depression severity and FoC were significantly lower in healthy controls than in former inpatients. The primary emotion “play” has a negatively significant effect on the FoC.

The results indicated the FoC is a positive and significant predictor of death anxiety. The existing literature supports this finding by reporting that FoC is a positive and significant determinant of anxiety (Satici et al., 2020). Likewise, Yıldırım et al. (2021) examined the role of religious coping and FoC in predicting anxiety, stress, and depression in Arab society. Their results indicated that the FoC was positively correlated with anxiety, stress, and depression. Further, positive religious coping was significantly related with stress and depression. While negative religious coping was a significant determinant of anxiety, depression, and stress.

Enea et al. (2021) investigated relationships between FoC and preoccupation with God, loneliness, and death obsession among Romanian adults. Results indicated an increase in the preoccupation with God, loneliness, and death obsession during the quarantine. Further, these existential struggles significantly predicted the FoC. In another study, Karakose and Malkoc (2021) investigated the psychological problems and coping strategies experienced by Turkish medical doctors during the COVID-19 pandemic. Their results indicated that taking antidepressants, praying, taking up hobbies, healthy and balanced diet, hygiene enhancement, and social distancing were some of the strategies used to cope with the psychological distress such as

anxiety, life stress, panic attacks, fear, sleep disturbances, and depression. Mirhosseini et al. (2021) examined the levels of general anxiety and death anxiety in Iranian population during the COVID-19 pandemic. Their results indicated that loss of a family member to COVID-19 and general anxiety level were significantly correlated with death anxiety.

The results indicated that depression is a positive and significant predictor of death anxiety. Prior findings also indicated that depression is a positive and significant predictor of death anxiety (Brown, 2011; Chang, 2011). These suggested that individuals suffering from depression may have thoughts of death and afraid from dying (Abdel-Khalek, 2002; Sridevi & Swathi, 2014). On the other hand, Bahar et al. (2021) investigated the effect of logotherapy on hope, death-related anxiety, and depression in diabetic patients with depression. The experimental results revealed that logotherapy training decreased the depression and death anxiety level of the patients, while increasing their hope.

The results showed that FoC has an indirect effect on death anxiety through depression. This suggested that an increase in the FoC will cause an increase in depression, resulting an increase in death anxiety. The present study contributes the literature by revealing the mediating role of depression in the relationship between the FoC and death anxiety. Previously, Secer and Ulaş (2021) investigated mediating roles of depression-anxiety, experiential avoidance, and emotional reactivity in the relationship between FoC and obsessive-compulsive disorder (OCD). The results indicated that experiential avoidance, emotional reactivity, and depression-anxiety mediates the relationship between the FoC and OCD. In a recent study, Durmus et al. (2022) have investigated mediating role of cyberchondria on the relationship between FoC and stress. They found that cyberchondria mediates the relationship between the FoC and stress.

In light of these findings, it can be suggested that psychosocial intervention activities should be conducted to reduce fear, anxiety, and mental tension caused by the FoC. This may help reduce depression and death anxiety experienced by individuals during the COVID-19 pandemic.

Implications

Important implications can be made for mental health professionals and practitioners in counseling. The findings suggested that FoC significantly related with death anxiety and depression. Mental health professionals can identify individuals who experience intense FoC and offer them individual psychotherapy. Likewise, educators can identify students who have a fear of COVID-19 in the educational environment and ensure that they received psychological counseling from their school counselor. Thereby, fear of COVID-19

screening can be performed on large masses in the school environment or outside of the school, and individuals with a high fear can be referred to relevant mental health institutions for a psychological support. Thus, the psychological problems caused by the FoC can be intervened and its negative effects can be reduced.

Limitations

It is noteworthy that the present study has some certain limitations. The first limitation was cross-sectional nature of the study design. Future research can be designed as longitudinal research to allow data collection at different time intervals. Secondly, there was no clinical sample among the participants. Future research can include participants from clinical samples. Thirdly, the data were collected using self-report scales. This limitation can be eliminated in future research by using different data collection methods (e.g., observations and interviews). The study group was selected by using the convenience sampling method. Future research can use purposive or random sampling methods. Finally, data in this study were collected online. Online Photovoice (OPV) could be used in future research since it gives participants the opportunity to express the personal experiences with less manipulation compared to classical quantitative research methods (Tanhan & Strack, 2020).

Authors' Contributions The authors have contributed significantly to be credited as authors according to the listed guidelines and are in agreement about the same.

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Data Availability Data available on request from the corresponding author.

Declarations

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

Conflict of Interest The authors declare that they have no conflicts of interest.

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