# Death Obsession, COVID-19–Related Fear and Religiosity in People Living with Type 2 Diabetes

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## Abstract
Patients diagnosed with type 2 diabetes were included among high-risk groups for more severe manifestations in case of COVID-19 infection and higher risk of mortality. The current study aims to (1) examine the relationship between death obsession, religiosity, and fear of COVID-19 among type 2 diabetes patients, and (2) assess if religiosity moderates the relationship between death obsession and fear of COVID-19. This cross-sectional online survey involved 306 type 2 diabetes patients. We found that 35.6 % of the participants were overweight and 14.6 % were suffering from obesity. Results showed that death obsession was positively associated with fear of COVID-19 and more religious individuals experience higher levels of fear. The overall level of religiosity did not moderate the relationship between death obsession and fear of COVID-19 but only the preoccupation with God dimension of the religiosity scale. The practical implications of these findings are discussed.

## Keywords
death obsession, fear of COVID-19, diabetes, religiosity

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## Introduction

Diabetes represents a major public health concern because it can lead to severe long-term complications, like stroke, heart attack, kidney failure, blindness, and lower limb amputation (World Health Organization, 2016). Type 2 diabetes mellitus affects millions of patients that are included among high-risk groups for more severe manifestations in case of COVID-19 infection and higher mortality rate (Targher et al., 2020; Wu et al., 2020). The prevalence rate of diabetes is higher in Romania than the mean of the European region (WHO, 2016), with the age- and sex-adjusted prevalence of diabetes mellitus of 11.6% (Mota et al., 2016). In other recent coronavirus outbreaks, the Middle East respiratory syndrome (MERS) and SARS, individuals with diabetes have also had a higher risk of mortality as chronic hyperglycemia and inflammation may lead to an abnormal and ineffective immune response (Corrao et al., 2021). Being made constantly aware of the higher life-threatening risk emphasized by the media and public health authorities (Rose & Renza, 2021), their worries and concerns about death might increase anxiety and fear of COVID-19 infection (Joensen et al., 2020; Yan et al., 2020).

Previous studies examined possible predictors of increased fear of coronavirus and showed the importance of media exposure and psychological vulnerability factors among the general population (Enea et al., 2021b; Mertens et al., 2020). Therefore, in the present study, we further assessed the relationship between death obsession, religiosity, and fear of COVID-19 in patients living with type 2 diabetes. Some recent evidence suggests that the relation between death obsession and fear of coronavirus could be moderated by religiosity (Enea et al., 2021b; Saffari et al., 2019). A better understanding of these factors would help improve interventions for psychological health among diabetes patients as coronaphobia has been a significant predictor of psychological distress during this global crisis (Lee et al., 2020).

### Terror Management Theory and Religiosity

COVID-19 is ostensibly and persistently depicted as a life-threatening danger for people with diabetes and it may be explicitly perceived as an ongoing death threat. Terror management theory (TMT; Greenberg et al., 1986; Pyszczynski et al., 2015) is the most influential theoretical approach that provides a valuable framework on how people psychologically deal with death. According to TMT theorists, humans' awareness of the inevitability of death coupled with their desire for life generates intense fear of death (Pyszczynski et al., 2015). Religion is a prominent cultural worldview that affords protection against fear of death (Vail et al., 2010). Cultural worldviews consist of beliefs about reality and provide literal or symbolic immortality (Pyszczynski et al., 2021). Literal immortality includes religious aspects of culture that promise to those who live up to religious standards that life will continue after physical death. Symbolic immortality refers to people feeling a part of something greater than them that will transcend beyond their physical existence (Pyszczynski et al., 2021). The

pandemic-specific situation heightened death-thought accessibility or mortality salience defined as the awareness of one's eventual death (Greenberg & Arndt, 2012). A substantial number of experimental studies have shown that mortality salience significantly influences behavior (Iverach et al., 2014) and exacerbates obsessive-compulsive behaviors, phobias and anxiety (Menzies & Dar-Nimrod, 2017; Strachan et al., 2007). Previous research suggested that mortality salience might trigger religiosity and prayerfulness (Thunström & Noy, 2019), and adverse life experiences elicited higher religious behavioral expressions (Poulin et al., 2009). Thus, people's faith generally increased and praying behaviors have intensified during the COVID-19 pandemic (Counted et al., 2022).

Results regarding the relationship between religiosity and anxiety or psychological distress during the COVID-19 outbreak have been mixed. Some studies found no relationship (Savitsky et al., 2020), while other studies indicated positive effects of religiosity associated with the less negative emotional impact of COVID-19 (Pirutinsky et al., 2020). In general, the role of religiosity and religious practices in responding to the SARS-CoV-2 outbreak suggested their protective role against the negative psychological outcomes of the pandemic by increasing people immune function and resilience (Counted et al., 2022; Molteni et al., 2021). In the literature, there has been significant debate whether religiosity affects type 2 diabetes patients' well-being and outcome (Darvyri et al., 2018). Given that previous studies showed that religiosity was related to medication adherence, disease control, and quality of life (Darvyri et al., 2018; Rivera-Hernandez, 2016; Saffari et al., 2019), we suppose that religiosity may also have positive effects during the COVID-19 pandemic among type 2 diabetes patients.

## Death Obsession and Fear of COVID-19

Death obsession consists of persistent, intrusive and repetitive thoughts focused on death, meaning that individuals with death obsession continually think about death-related scenarios or images in which the person or a relative encounters death (Abdel-Khalek, 1998, 2004). It is one of the three components (death anxiety, death depression, and death obsession) of the general concept of death distress (i.e., negative attitudes toward death) that often manifest simultaneously (Abdel-Khalek, 2004). Death anxiety refers to negative emotions related to the fear of dying, while death depression is a sort of sadness associated with the concept of death (Neimeyer, 1998).

Previous literature on the death-related topic is dominated by research investigating death anxiety (Cohen et al., 2005; Postolică et al., 2019), while the present study examines death obsession intensity. Studies found that death obsession has been positively related to anxiety disorders, death anxiety, depression, and death-related depression (Abdel-Khalek, 2002; 2004). Besides, some individuals are in general concerned about the issue of death (Mohammadzadeh et al., 2018). Taking into account that mass media informs people on the exact number of daily coronavirus deaths and these constant reminders of death may maintain mortality salience during the COVID-

19 pandemic, we suppose that the idea of death may be more persistent in the individuals' minds.

Fear is one of the common emotional responses under the health threat of the COVID-19 pandemic that might have different consequences depending on its intensity. Within the current pandemic context, adaptive fear is useful as it might promote protective behaviors like washing hands and maintaining physical distance (Harper et al., 2020), while insufficient fear may determine individuals ignoring the risks of infection. Furthermore, high levels of fear might exacerbate pre-existing mental health disorders and might be associated with suicide risk (Mamun & Griffiths, 2020), anxiety, and depression (Ahorsu et al., 2020). The psychological burden of the fear of COVID-19 might be significantly higher in type 2 diabetes patients. Recent research suggested a high prevalence of diabetes-specific COVID-19 worries (i.e., higher fear of contracting the virus) in diabetic patients (Al-Sofiani et al., 2021) and, generally, poorer psychosocial health (Joensen et al., 2020).

Extensive research examining the relationship between death anxiety and religiosity has been mixed and highly conflicting, suggesting complex relationships between religion and death distress, with either negative, positive, curvilinear, or absent relationships (Ellis & Wahab, 2013; Jong et al., 2018). So far, little research has investigated the association between death obsession and religiosity, although the relationship between obsessive-compulsive symptoms and religiosity has been demonstrated in non-clinical individuals (Ok & Gören, 2018). Furthermore, previous studies showed that people with diabetes have experienced higher death anxiety compared with healthy controls (Rahrovi et al., 2018). Recently, a study found that death obsession, loneliness and preoccupation with God predicted fear of COVID-19 during the quarantine among healthy individuals (Enea et al., 2021b). To our best knowledge, this is the first study that investigates the link between death obsession and fear of COVID-19 among high religious type 2 diabetes patients.

The current study aims to (1) examine the relationship between death obsession, religiosity, and fear of COVID-19, and (2) assess whether religiosity moderates the relationship between death obsession and fear of COVID-19 among Romanian patients living with type 2 diabetes. Given that Romania is the most religious out of 34 European countries (Evans & Baronavski, 2018), the role of religiosity is even more important to investigate within the current pandemic. Evans and Baronavski (2018) showed in their religious profile of Romania that for 50% of adults, religion is very important in their lives, 50% attend worship at least monthly, and 44% of the respondents say they pray daily. In Romania, authorities did not suspend religious in-person services when the data collection for this study took place, and religious individuals could gather for worship and pray in the church, respecting social distancing recommendations. Based on previous studies conducted during the pandemic in the Romanian population (Enea et al., 2021a; Enea et al., 2021b), we hypothesized that death obsession would be significantly associated with fear of coronavirus and this relationship would be moderated by religiosity among type 2 diabetes patients.

## Method

### Participants and Procedure

Participants of this study had type 2 diabetes and lived in the city of Romania most affected by COVID-19 when the data collection took place (between May 18 and July 30, 2020) in a medical analysis laboratory. The present study was based on a cross-sectional survey design. The sample included 306 type 2 diabetes participants (M = 62.74, SD = 11.17) and most of them were women (n = 182, 59.5%). Regarding religion, 94.4% of the participants were Christians, 3.6% were of another religion, 1.3% atheists, and 0.7% agnostics. Based on the BMI, which we computed by taking into account the participant's height and weight, four participants (1.3 %) were under-weight, 179 participants (58.5 %) had normal weight, 109 (35.6 %) were overweight and 14 (4.6 %) were suffering from obesity.

Diabetes participants were recruited in the medical laboratory by a trained nurse, who explained the study and proposed to complete a self-reported questionnaire written in the participants' native language. They were given the choice to complete the questionnaire in paper-pencil format or in the online version in the medical laboratory, without receiving any compensation. All participants provided informed consent and were informed that their responses would remain anonymous. Participants had the right to refuse to participate and about 20% of eligible patients declined study participation. Exclusion criteria were: dementia or other severe cognitive deficits precluding study participation. The study received ethical approval from the Ethics Committee of the Faculty of Psychology and Educational Sciences, at the Ethics approval was obtained from the Ethics Committee of the Faculty of Psychology and Education Sciences at Alexandru Ioan Cuza University.

### Measures

*Demographics.* Participants were asked to provide background information including age, gender (0: male; 1: female), education (categorized into six levels), religion, marital status, blood sugar level, weight and height, and whether the participants considered themselves to be religious (0: yes; 1: no).

**The Fear of COVID-19 Scale** (Ahorsu et al., 2020) is a 7-item scale that asks participants to indicate their level of fear of COVID-19 on a 5-point scale, ranging from 1 = *strongly disagree* to 5 = *strongly agree* (sample item: *"I am afraid of losing my life because of coronavirus-19"*). Validation studies report good psychometric properties for this scale (Ahorsu et al., 2020; Enea et al., 2021b). The scores from the current study were subjected to a Confirmatory Factor Analysis (CFA) which led to acceptable results ($\chi^2$ = 21.48, df = 10, $p$ = 0.01, CFI = 0.992, TLI = 0.985, RMSEA = 0.061 [90% CI 0.024; 0.097], SRMR = 0.016). In the current study, the internal consistency was .92.

**The Dimensions of Religiosity Scale** (DRS; Joseph & DiDuca, 2007) is a 20-item self-report measure of the level of religiosity. The scale has four subscales: religious

preoccupation with God ("*My thoughts often drift to God*"), guidance ("*I pray for guidance*"), conviction ("*I will always believe in God*"), and emotional involvement ("*Prayer lifts my spirits*"). Participants rate their responses on a 5-point scale, ranging from 1 = *strongly disagree* to 5 = *strongly agree*. After computing a CFA, we found the following solution, $\chi^2$ = 568.94, df = 248, $p$ < 0.001, CFI = 0.934, TLI = 0.915, RMSEA = 0.097 [90% CI 0.088; 0.105], SRMR = 0.038, which was deemed to be acceptable. The internal consistency of the scale and subscales was good in previously published studies (Enea et al., 2021a; Enea et al., 2021b), ranging from α = .87 to α = .93 in the current study.

   **The Death Obsession Scale (**DOS; Abdel-Khalek, 1998) is a 15-item scale on a 5-point Likert scale ranging from no (1) to very much (5). The scale has three dimensions: death rumination ("*I find it greatly difficult to get rid of thoughts about death*"), death dominance ("*The idea that I will die keeps occurring to me*"), and death idea repetition ("*I fear to be dominated by the idea of death*"). However, given that a CFA revealed that the 3-factor solution was not acceptable due to very high levels of correlation between the factors and unsatisfactory goodness-of-fit indices, a one-factor solution was tested (Abdel-Khalek & Lester, 2003). As this model proved to be acceptable ($\chi^2$ = 187.49, df = 61, $p$ < 0.001, CFI = 0.970, TLI = 0.955, RMSEA = 0.082 [90% CI 0.069; 0.096], SRMR = 0.038), only the total score was used in this research. The internal consistency was good in previously published studies (Enea et al., 2021a; Enea et al., 2021b) and in the current study, α =.95 for the entire DOS scale.

## Statistical Analyses

The preliminary analyses and the regression analysis were conducted using the IBM SPSS 20 statistical software. To test the normality of the distributions we computed the Skewness and Kurtosis measures that are recommended with larger samples (more than 300 participants; Kim, 2013). Normality distributed variables should have Skewness between −1 and 1 and Kurtosis between −3 and 3. When non-normality was found, we used a two-step transformation described by Templeton (2011) to achieve a normal distribution. First, we transformed the variable into a percentile rank; second, we applied the inverse-normal transformation to form a variable consisting of normally distributed z-scores. First, we examined the level of fear of COVID-19 in our sample. Subsequently, we conducted Pearson-product correlations between the variables included in the research. Third, we used hierarchical multiple linear regression to test the hypothesized prediction models. This shows whether the predictors explain a statistically significant amount of variance in the outcome. We build several nested regression models by adding variables to a previous model at each step, and we measured whether the newly added variables bring a significant improvement by assessing the differences in $R^2$ between models. For each variable, we interpreted the standardized regression coefficient. Finally, we examined the interactions between death obsession and religiosity and verified whether religiosity moderates the impact of death obsession on the fear of COVID-19. We used the Process macro for SPSS to test the moderations

(Hayes, 2013). To obtain standardized regression coefficients for the moderation analyses, we standardized the scores for each variable and used these values in the analyses. Finally, we computed simple slope analyses to test the conditional effects of the predictor at low (−1 SD), medium (mean), and high (+1 SD) levels of the moderator.

## Results

### Descriptive Statistics

Table 1 shows the means and standard deviations for all the research variables and the correlations among the variables. We found that 83.3% of the participants considered themselves to be religious. For this sample, the mean value of fear of COVID-19 was 22.55 (SD = 6.56, min. = 7, max. = 35). To compute the number of participants reporting low, medium, or high scores at the fear of COVID-19, we divided the theoretical range of the scale (7–35) into three equal groups. 67 participants (21.9 %) reported low scores, 111 participants (36.3 %) reported medium scores and 128 participants (41.8 %) reported high scores at Fear of COVID-19. Finally, some of the correlations among the dimensions of religiosity exceeded the level of .80, indicating some possible multicollinearity problems. These were further tested within the regression analysis.

### The Relationships between Death Obsession, Religiosity, and Fear of COVID-19

To estimate the relationship between fear of COVID-19 and all the proposed predictors (religiosity and its dimensions, death obsession), we applied two hierarchical multiple linear regressions. For the first one, in the first step, we introduced the demographic variables (age, sex, and whether the participants considered themselves to be religious and BMI) as control variables. In the second step, we further introduced the total score for death obsession. In the third and last step, in addition to the already mentioned variables, we introduced the total score for religiosity.

The results are presented in Table 2. All the three models are significant. The first model, $F(4, 303) = 24.26$, $p < .001$, containing only the control variables, accounted for 23.4% of the fear of COVID-19's variance. After introducing death obsession, the model $F(5, 303) = 32.51$, $p < .001$ became significantly better ($R2$ change = .108, $p < .001$) and explained 34.1% of the fear of COVID-19's variance. The final model $F(6, 303) = 28.98$, $p < .001$, also containing religiosity, explained 35.5 % of the fear of COVID-19's variance and was significantly better than the second model ($R2$ change = .01, $p < .01$).

By analyzing the last model, we can observe that death obsession has a significant and positive relationship with fear of COVID-19 ($\beta = .32$, $p < .001$). The participants who scored higher on death obsession also scored higher on fear of COVID-19.

**Table 1.** Means, standard deviations, and correlations among the variables.

| Variable | M | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Age | 62.74 | 11.17 | — | | | | | | | | |
| 2. Blood sugar level | 131.68 | 95.96 | .05 | — | | | | | | | |
| 3. BMI | 24.32 | 2.87 | −.33*** | .12* | — | | | | | | |
| 4. Religiosity - total | 4.13 | 0.71 | .46*** | .13* | −.08 | — | | | | | |
| 5. Religiosity - preoccupation | 3.83 | 0.893 | .48*** | .17** | −.07 | .91*** | — | | | | |
| 6. Religiosity - conviction[a] | 4.46 | 0.678 | .35*** | .11* | −.04 | .92*** | .77*** | — | | | |
| 7. Religiosity - emotional involvement | 4.13 | 0.827 | .38*** | .09 | −.09 | .94*** | .80*** | .86*** | — | | |
| 8. Religiosity - guidance | 4.1 | 0.677 | .43*** | .13* | −.07 | .92*** | .79*** | .82*** | .83*** | — | |
| 9. Death obsession - total | 2.25 | 0.83 | −.06 | .05 | .17** | .01 | .03 | .02 | −.01 | −.05 | — |
| 10. Fear of Covid-19 | 22.55 | 6.56 | .27*** | .08 | .18** | .38*** | .34*** | .38*** | .32*** | .34*** | .36*** |

*Note:* N =306; *** $p < .001$; ** $p < .01$; * $p < .05$; [a] For Religiosity – conviction scale the mean and standard deviation were computed using the non-normal variable and the correlations were computed using the normalized variable.

**Table 2.** Hierarchical regression with death obsession and religiosity predicting fear of COVID-19.

| Predictor | β | | | F | Adjusted $R^2$ | $R^2$ change |
|---|---|---|---|---|---|---|
| | Step 1 | Step 2 | Step 3 | | | |
| Step 1: Control variables | | | | 24.26*** | .23 | .24*** |
| Sex (1—male; 2—female) | .22*** | .21*** | .17*** | | | |
| Age | .25*** | .26*** | .22*** | | | |
| Are you religious? (1—yes; 2—no) | −.20*** | −.20*** | −.09 | | | |
| BMI | .32*** | .26*** | .25*** | | | |
| Step 2: Death obsession | | .33*** | .32*** | 32.51*** | .34 | .10*** |
| Step 3: Religiosity | | | .18** | 28.94*** | .35 | .01** |

Note: N = 306; β = standardized regression coefficients; *** p < .001; ** p < .01.

Religiosity also presented a significant and positive relationship with fear of COVID-19 (β = .18, p < .01). The participants with higher levels of religiosity suffered from higher levels of fear of COVID-19.

With the second model, we tested the relationship between death obsession, the dimensions of religiosity, and fear of COVID-19. In the first step, we introduced the control variables; in the second step, death obsession; and in the third step, the dimensions of religiosity. To further test for multicollinearity, we also computed the Variable Inflation Factors (VIF) values for each predictor.

The results are shown in Table 3. The first model F(4,305) = 24.26, p < .001, containing the control variables, explained 23.4 % of the fear of COVID-19's variance. The second model F(5,305) = 32.51, p < .001, which also contained death obsession, explained 34.1 % of the fear of COVID-19's variance and was significantly better than the first one ($R^2$ change = .10, p < .001). The final model F(9,305) = 20.21, p < .001, which also included the dimensions of religiosity, brought a significant improvement ($R^2$ change = .02, p < .01) and explained 36.2 % of the fear of COVID-19's variance.

The last model showed that death obsession was significantly and positively related to the fear of COVID-19 (β = .34, p < .001). Also, we found a significant and positive relationship between the conviction dimension of religiosity and fear of COVID-19 (β = .20, p = .04). The participants who reported higher levels of death obsession and religious conviction also reported higher levels of fear of COVID-19. Finally, all predictors showed acceptable levels of multicollinearity (VIF <10; Hair et al., 1995).

## Moderation Analyses

We explored the moderating role of religiosity on the relationship between death obsession and fear of COVID-19. First, we explored the interaction between the total scores for religiosity and death obsession and whether it predicts the fear of COVID-19.

**Table 3.** Hierarchical regression with death obsession and the dimensions of religiosity predicting fear of COVID-19.

| | β | | | | | |
|---|---|---|---|---|---|---|
| Predictor | Step 1 | Step 2 | Step 3 | F | Adjusted $R^2$ | $R^2$ change |
| *Step 1: Control variables* | | | | 24.26*** | .23 | .24*** |
| Sex (1–male; 2–female) | .22*** | .21*** | .18*** | | | |
| Age | .25*** | .26*** | .23*** | | | |
| Are you religious? (1–yes; 2–no) | −.20*** | −.20*** | −.11 | | | |
| BMI | .32*** | .26*** | .24*** | | | |
| *Step 2: Death obsession* | | .33*** | .34*** | 32.51*** | .34 | .10*** |
| *Step 3: Religiosity dimensions* | | | | 20.21*** | .36 | .02** |
| Preoccupation with god | | | −.07 | | | |
| Conviction | | | .20* | | | |
| Emotional involvement | | | −.13 | | | |
| Guidance | | | .17 | | | |

Note: N = 306; β = standardized regression coefficients; *** $p < .001$; ** $p < .01$; * $p < .05$.

We controlled for age, sex, BMI, and whether the participants considered themselves to be religious. Death obsession (β = .33, $p < .001$) and religiosity (β = .18, $p < .01$) were significantly related to fear of COVID-19 but their interaction (β = .04, $p = .33$) was not.

In the subsequent analyses, we tested whether the dimensions of religiosity moderated the link between death obsession and fear of COVID-19.

We found that the interaction (β = 10, p = .02) between death obsession (β = .34, p < .001) and preoccupation with God (β = .10, p = .10) was significantly related to fear of COVID-19 (see Figure 1). The relationship between death obsession and fear of COVID-19 was significant and positive at low (β = .22, p < .001), medium (β = .36, p < .001) and high (β = .48, p < .001) levels of preoccupation with God. However, the association became stronger with higher levels of preoccupation. The other dimensions of religiosity (conviction, emotional involvement, and guidance) did not moderate the link between death obsession and fear of COVID-19.

## Discussion

This cross-sectional study's first aim was to examine the relationship between death obsession, religiosity, and fear of COVID-19 among patients living with type 2 diabetes. Death obsession was significantly positively associated with fear of COVID-19 and the effect size of this relationship was medium. These results are consistent with recent evidence from a cross-sectional study that found a moderate positive relation of death obsession with fear of COVID-19 during quarantine among the general population (Enea et al., 2021b). Our findings suggest that habitual ruminations describing
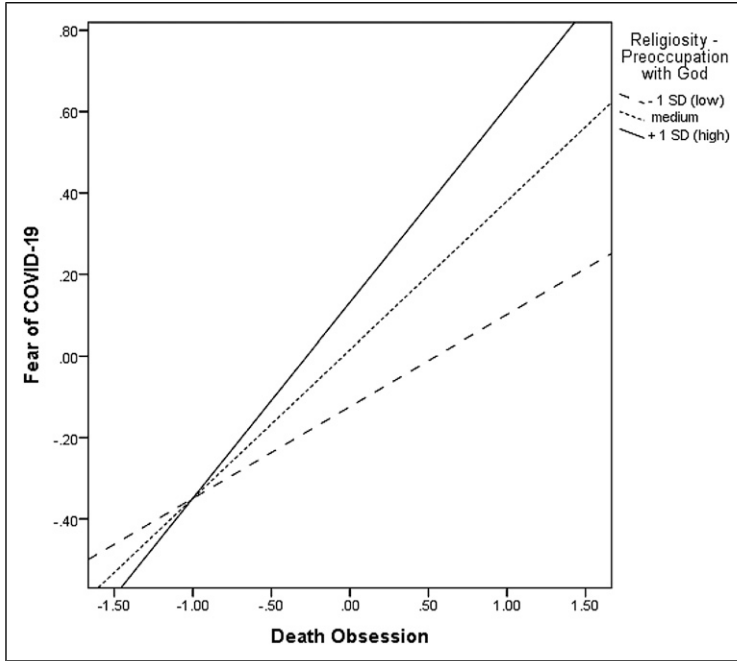
**Figure 1.** Presence of Fear of COVID-19 as a function of death obsession and preoccupation with God.

death obsession (Abdel-Khalek, 1998) are linked with the fears and worries triggered by COVID-19 as a proximal and serious life-threatening danger. This view is consistent with evidence from a recent cross-sectional study that found a positive relationship between perceived personal risk for COVID-19 and death distress, including death obsession and death depression, in the general population (Yıldırım & Güler, 2020). Thus, people with diabetes perceived higher personal risk, vulnerability and experienced increased worries regarding COVID-19 compared to healthy individuals (Yan et al., 2020). In addition, people with diabetes were previously found to exhibit a high prevalence of COVID-19-specific worries related to diabetes, such as high fear of being severely affected by the disease if infected, worries about being labeled as a high-risk group, and concerns regarding the inability to manage diabetes if infected (Joensen et al., 2020).

Notably, the level of religiosity was significantly positively associated with fear of COVID-19, indicating that religiosity did not emerge as a protective factor against COVID-19 fear among religious type 2 diabetes patients. This finding seems in line with other cross-sectional studies that found higher religiosity to be positively associated with greater COVID-19 stress (Khoo et al., 2021), increased lifetime risk for panic disorders (Kendler et al., 2003), specific fear of illness, contamination fears, and

obsessions (Olatunji et al., 2005). Moreover, our study was conducted when participants might attend religious services and another possible explanation may consist in the awareness of the religious individuals with diabetes that SARS-CoV-2 may be highly transmissible in certain settings, including church and group singing events (Hamner et al., 2020).

Another aim was to explore the moderating role of religiosity on the relationship between death obsession and fear of COVID-19. Our findings showed that the overall level of religiosity did not act upon the relationship between death obsession and fear of COVID-19 but only the preoccupation with God dimension of the religiosity scale. This confirms the findings of a recent study indicating that overall religiosity did not significantly contribute to variance in death obsession among Muslim older people (Fekih-Romdhane et al., 2020). In addition, the quality of relationship with God showed spiritually immature and minor in Iranian patients suffering from type 2 diabetes (Nozari et al., 2014). A longitudinal study found that not religiousness per se buffered against death anxiety in old age, but the consistency of beliefs and religious practices (Wink & Scott, 2005). Thus, previous studies showed that religiosity orientation (i.e., extrinsic or intrinsic) is an important factor associated with death obsession among healthy individuals (Maltby & Day, 2000; Salmanpour & Issazadegan, 2012). Individuals with extrinsic religious beliefs experienced elevated death obsession levels and high arousal emotions like fear, sadness, anger, and guilt, while individuals with intrinsic orientation experienced less death obsession and developed cognitive processes to effectively deal with death (Salmanpour & Issazadegan, 2012). Future studies should investigate the relationship between death obsession and religious orientation among type 2 diabetes patients.

The fact that religiosity did not moderate the relation between death obsession and fear of COVID-19 may suggest that people living with type 2 diabetes have problems in managing death obsession features exacerbated by the pandemic. Their persistent and invasive thoughts of death have not been suppressed by emotional involvement and conviction in God and, therefore, overwhelmed with anxiety they may become more vulnerable to psychological disorders (Pyszczynski et al., 2021).

Religious individuals that express stronger preoccupations with God, if they are highly obsessed by the idea of death, also experience increased fear of COVID-19. Our findings are consistent with recent studies linking death obsession with negative religious coping and also with an anxious or avoidant attachment to God (Mohammadzadeh & Najafi, 2020; Mohammadzadeh & Oraki, 2020). These results also offer support for the hypothesis that high levels of death obsession and high levels of religiosity may coexist (Ellis & Wahab, 2013). Disasters and severe crises may particularly have the potential to activate spiritual struggles and troubling religious attitudes that can increase stress and negative emotions (Pirutinsky et al., 2020).

## Limitations and Future Directions

The present findings should be interpreted in light of our study limitations. First, the study used a cross-sectional design, which prevents us from examining causal relationships between the included variables, as well as potential changes driven by the current social context. Second, our study was not able to capture the potentially relevant changes that appeared in the life of the participants during the COVID-19 pandemic regarding diabetes self-management practices (Yan et al., 2020). Questions remain about whether health care access and restrictions may have also been linked with fear of COVID-19 in relation to patients' ability to maintain their diabetes health-management routines (Joensen et al., 2020). Future research is needed to extend the present findings and to further clarify the complex relationship between fear of COVID-19, death distress, religiosity and health outcomes among patients with type 2 diabetes. In particular, longitudinal studies would permit to examine the causal relationship between death obsession or other components of death distress (i.e., death anxiety, death depression) and fear of COVID-19. Future studies may also focus on both, individual factors (e.g., coping strategies, positivity, Yildirim & Guler, 2020) as well as social and interpersonal factors (e.g., social support; Rivera-Hernandez, 2016) that could be relevant for patients' ability to manage their fear of COVID-19 and health-related outcomes.

## Practical Implications

Our results have important implications for the psychological health of people with diabetes as a vulnerable group for negative health outcomes under the threat of the COVID-19 pandemic (Targher et al., 2020; Yan et al., 2020). It would be necessary that healthcare professionals enhance their efforts to provide and facilitate diabetes patients' access to psychological support and mental health services adapted to current conditions, including using telehealth interventions delivered online (Lee et al., 2020). Screening for mental health difficulties should be incorporated in routine healthcare services for patients with diabetes in order to support their early detection (Singhai et al., 2020). To this end, healthcare professionals could benefit from additional training for the identification and management of COVID-19–related psychological difficulties among patients with diabetes. Because these are related to both death preoccupation and religiosity, our findings suggest that it would also be beneficial to incorporate spiritual skills training that could enable healthcare professionals to alleviate patients' death distress and fear of COVID-19 (Rababa et al., 2021).

Strategies and interventions aimed at mitigating excessive fear of COVID-19 among people with diabetes should also consider, explore and address their preoccupation and worries about death. These may be important concerns for people with diabetes, given their increased actual and perceived risk and vulnerability (Wu et al., 2020; Yan et al., 2020). Therefore, it is essential to maintain up-to-date communication of accurate information about diabetes and COVID-19 to these patients. Thus, health education,

support, and guidance from health professionals regarding COVID-19 preventive measures for patients with diabetes and the vaccination will help them diminish the risk of contracting the virus and mitigate their fear of infection, as well as their death obsession.

During the COVID-19 pandemic, it is also of critical importance for these patients to receive adequate instrumental and emotional support that will help them to manage their diabetes, fear of death, and psychological distress (Joensen et al., 2020; Rivera-Hernandez, 2016). Therefore, it is necessary to help the patients strengthen or extend their social support networks, by increasing support from family, providing peer support, creating special help lines for people with diabetes, and patients' communities. Emphasizing the importance of preventive measures (Enea et al., 2022) and the vaccine's efficacy in protecting people with diabetes against COVID-19 could prove beneficial for mitigating their death concern and fear of COVID-19.

## Declaration of Conflicting Interests

## Ethical Approval

All procedures performed in this study involving human participants were in accordance with the ethical standards of the institutional research committee of Alexandru Ioan Cuza University and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

## Funding

## Informed Consent

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

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