International Journal of Occupational Medicine and Environmental Health 2023;36(4):450–464
https://doi.org/10.13075/ijomeh.1896.02094

RELIGIOSITY AND DEATH ANXIETY AMONG CANCER PATIENTS: THE MEDIATING ROLE OF RELIGIOUS COMFORT AND STRUGGLE

RADOSŁAW RYBARSKI, RAFAŁ P. BARTCZUK, JACEK ŚLIWAK, and BEATA ZARZYCKA

The John Paul II Catholic University of Lublin, Lublin, Poland
Institute of Psychology

Abstract
Objectives: Religiosity may serve as a personal source of support when people face a life-threatening illness, but it can also elicit stress. The main aim of this study is to show how various religious dimensions interplay in predicting death anxiety in patients diagnosed as having cancer. **Material and Methods:** In the cross-sectional, descriptive-analytical research, 141 Polish patients who were hospitalized due to cancer were selected using sequential convenience sampling. Data were collected using the *Centrality of Religiosity Scale*, *Religious Comfort and Strain Scale*, and the *Death Anxiety and Dying Distress Scale*. **Results:** The authors' results show that the effect of the centrality of religiosity on death anxiety is non-linear. The authors can also confirm the mediating role of religious comfort and struggles in the relationship between the centrality of religiosity and death anxiety. **Conclusions:** Thus, religious struggles appear to weaken the effect of religion on death anxiety, whereas religious comfort (contrary to expectation) does not enhance it. Int J Occup Med Environ Health. 2023;36(4):450–64

Key words:
religious coping, cancer patients, death anxiety, religiosity, religious struggle, religious comfort

INTRODUCTION

Cancer rates continue to grow and cancer is among the most critical problems in contemporary human societies. In addition, cancer is one of the most frequently cited causes of death in the world, including in Poland. According to estimates from the International Agency for Research on Cancer, in 2020, there were 19.3 million cases of cancer, 9.96 million people died from cancer. By 2040, about 30.2 million new cases of cancer are expected. According to this survey, 1 in 3 men and 1 in 5 women will get cancer during their lifetime [1]. For many people, a diagnosis of cancer means a death sentence because of the uncontrolled cell multiplication that destroys the body, leading to a slow and painful death [2]. The somatic symptoms of the disease with which oncological patients struggle entail many psychological symptoms [3], among which death anxiety is common [4].

There is evidence that religion may serve as a personal resource of support and consolation when people face death anxiety [5]. Religious beliefs or participation in religious rituals can provide support, both social and spiritual, which comes from the conviction of being under God's protection [6]. However, religion can also elicit stress because adverse events can lead people to blame or feel angry at God [7]. Although the role of religion in predicting death anxiety has previously been confirmed [8],

Received: November 3, 2022. Accepted: June 2, 2023.
Corresponding author: Radosław Rybarski, The John Paul II Catholic University of Lublin, Institute of Psychology, Al. Racławickie 14, 20-950 Lublin, Poland (e-mail: radekrybarski@kul.lublin.pl).

there is still inconsistency regarding the direction of the relationship between religion and death anxiety. Furthermore, little is known about the mechanisms that can help to explain the relationship between religiousness and death anxiety. This study expands upon previous research in 2 important ways. First, by building upon Huber's [9] concept of centrality and contents of religiosity, the authors have investigated the patterns of the relationships between religiosity and death anxiety among cancer patients. Second, the authors have explained a potential mechanism for how centrality influences death anxiety, and investigated the mediating role of religious comfort and religious struggle in this relationship.

Religiosity and death anxiety

The view that faith and anxiety are intercorrelated has a long history. For example, Freud emphasized that the most basic and effective function of religion is to protect humanity from experiencing anxiety [10]. Death anxiety is a type of anxiety that religion seems especially well-suited to quell. Terror management theory (TMT) [10] is the most influential theoretical approach to how people psychologically deal with death anxiety. Therefore the authors used this theory as the conceptual basis for the research. The TMT asserts that the awareness of death in combination with the motivation to stay alive engenders a paralyzing fear of death, which may be buffered by the individual's cultural worldviews and self-esteem. The sociocultural variables are of particular importance because TMT argues that culturally-provided worldviews can offer protection from existential distress [11], and religious beliefs may be one of those worldviews. When the worldview to which a person adheres argues that they or their essence will continue even after corporeal death, as many religions do, then there would be no need for anxiety about the termination of one's own existence. Religion often provides literal immortality by promising that (despite its inevitability) physical death does not necessarily mean the end of human existence. Symbolic immortality is another kind of immortality provided by religious worldviews, which allows a person to experience the feeling of being a valuable part of something bigger than themself, part of something that can outlast the death of the physical body [12].

The research results on the relationship between religiousness and death anxiety are inconsistent. Some studies have reported a negative relationship between religiosity and death anxiety [12–14], while other studies have shown a positive relationship [15,16] or a lack of significant correlations between religiosity and death anxiety [17,18]. A recent review has found 100 studies that reported a total of 202 linear correlations between death anxiety and religiosity from 113 independent samples [19]. Donovan's survey of 137 studies revealed that 78 provided evidence for a negative relationship between death anxiety and religiosity, whereas 13 provided evidence for a positive relationship [20]. A survey conducted by Ellis and Wahab [21] has drawn similar conclusions. These authors reviewed 84 papers, from which they extracted 108 effects. Of these, 40 showed a negative correlation between death anxiety and religiosity, 27 showed a positive correlation, while 32 showed no significant correlations in either direction.

The inconsistency in the research findings on the relationship between religiousness and death anxiety may be explained in 2 ways. First, these studies differed in the aspects of religiousness that they considered. Some studies examined motivational or behavioural religiousness, whereas others included strain-related aspects of religiousness. For example, people who attended religious services or had a positive God image reported lower death anxiety. Conversely, people who had a distant, harmful, avoidant or indifferent image of God had higher death anxiety.

Religious struggle, which indicates strain related to the religious domain, also correlated positively with death

anxiety. Thus, a structured theoretical framework can help to organize various dimensions of religiosity and may also help to further clarify the relationships between religiousness and death anxiety. Second, some researchers have suggested that there is a curvilinear relationship between religiosity and death anxiety [4], which forms an inverted-U pattern. In this approach (up to a certain point), death anxiety increases as religiousness increases. When the fear of death reaches its climax, religiosity begins to act to reduce this fear [20]. In one of the first studies to include religious beliefs, participation in religious rites, and religious experience, Leming [22] indicated that death anxiety initially increases alongside the 3 religious dimensions, but only for people low in religiosity. In the case of people with moderate and high scores in dimensions of religiosity, death anxiety decreases. Thus, Leming argued that religiosity can be both arousing and relieving for death anxiety. For example, religion can arouse fear if it evokes thoughts about judgment after death and divine punishment for committed sins, but religion can also relieve anxiety in people who expect life after death. Wink and Scott's [23] research also revealed a curvilinear relationship between religious orientation and death anxiety. People with high intrinsic and extrinsic religiosity experienced significantly lower death anxiety than people with low intrinsic and extrinsic religiosity. A recent meta-analysis has found support for an inverted-U pattern in 10 of the 11 studies that directly tested for a curvilinear relationship between death anxiety and religiosity [20].

Although these studies provided valuable insight into a possible link between various measures of religiosity and death anxiety, they are inconclusive. Supplementary studies that employ various religious variables and structured theoretical background are needed to further clarify the observed relationships. A possible theoretical framework for how various aspects of religiousness may influence death anxiety may be drawn from Huber's [8] concept of the centrality and content of religiosity. Centrality indicates the importance of the religious construct system among other (non-religious) constructs in personality. Huber [24] distinguished among those who are highly religious with a central position of the religious construct system, those who are religious with a subordinated position of the personal religious construct system, and those who are non-religious with a marginal position of the religious construct system. Based on this theoretical framework and previous research findings, the authors hypothesize that: H1: The relationship between the centrality of religiosity and death anxiety may take a curvilinear form and depend on the status of religious constructs in personality: in the group with a marginal position of the religious system, death anxiety increases as the centrality of religiosity increases; whereas in the group with a central position of the religious system, death anxiety decreases as the centrality of religiosity increases.

The mediating role of religious content: religious comfort and struggle

Religion is a complex phenomenon. Studies show that in experiencing cancer, religiosity can be a source not only of perceived comfort, but also of tension. There is ample evidence to demonstrate the relationships between religiosity and psychosocial adjustment in cancer patients [25]. Religion can be a source of psychological strength, and a motivation to acquire and consolidate the new health-promoting behaviours that are necessary to cope with the disease [26]. In the context of cancer, religious beliefs, behaviours, and experiences may be significant resources and are beneficial for managing the physical, mental, and social challenges of the cancer experience [27]. Religion can also provide a context for patients to integrate difficult experiences into their lives in ways that may help promote greater well-being and better quality of life. However, this relationship is not uniformly positive because

some religious dimensions (e.g., religious struggles) may be associated with higher distress and poorer subjective health [28].

Experiencing cancer can bring several specific emotional and cognitive reactions related to God. For example, many people who experience suffering in illness attribute God with responsibility for what has happened to them [29]. The disease can then cause intense feelings of anger towards God. It is not uncommon in the face of suffering to be convinced that God has intentionally hurt the person, does not respond to requests for healing, or is passively looking at unjust suffering [6]. A significant amount of research has underlined the relationship between religious struggles and the response to adverse life events such as illness [6]. These findings suggest that religion can provide a level of comfort that enables individuals to manage distress and effectively foster well-being. However, religion does not always bring comfort as religion-related difficulties, and it can also elicit stress and struggle. While religious comfort reflects personal benefits derived from faith, religious struggles are experiences of conflict or distress that refer to religious issues [30]. If one's worldview offers protection from death anxiety, then doubts concerning one's worldview could result in the loss of this benefit [15]. Surprisingly, this has received relatively little empirical attention. Thus, it is necessary to examine the relationship between death anxiety and such religious contents as a religious crisis, doubts, or struggles.

Hubers' [31] concept of centrality and contents of religiosity may also provide possible theoretical explanations for how various contents of religiosity may help explain the relationship between centrality of religiosity and death anxiety. The content of religiosity indicates that there are a number of elements in the religious construct system, such as religious comfort and struggles. Religious struggle indicates the forms of distress or conflicts in the religious or spiritual realm [32]. Struggles may refer directly to God and be expressed as negative emotions towards God, a sense of guilt towards God, or interpersonal conflicts related to religion. Meanwhile, religious comfort indicates the potential benefits that people can derive from religion, such as a positive relationship with God or the benefits of faith [33].

Huber and Huber [31] distinguished and empirically confirmed that religious contents, which are salient in the religious construct system of the group with a central position of this system, have a much stronger relevance for general psychological dispositions than in the other groups. This was confirmed with regards to the political relevance of religious concepts [24,34], to the social relevance of the experience of forgiveness by God [35], and interpersonal forgiveness [36]. Recently, Zarzycka et al. [37] further expand this prediction by providing evidence that the status of religious constructs in personality will moderate the relationships between the centrality of religiosity and various religious contents. This function of religiosity has led to the second hypothesis: H2: Religious comfort strengthens while spiritual struggles weaken the buffering effect of religiosity on death anxiety.

The aim of this study

This study has investigated the links between religiosity and the death anxiety among cancer patients, and the potential mediation of this relationship by religious comfort and struggles. Two aspects of religiosity were captured in the model. The first aspect is the centrality of religiosity. The centrality of religiosity means the autonomy of systems of religious constructs in the structure of all systems of human individual constructs. It was hypothesized that the relation between religiosity and death anxiety is curvilinear. The highest death anxiety was expected among patients with an average centrality of religiosity. The second aspect of religiosity (i.e., spiritual comfort and struggles) is functional. It was expected that religious

comfort strengthens, while spiritual struggles weaken the buffering effect of religiosity on death anxiety.

MATERIAL AND METHODS

Participants

In total, 141 patients who were hospitalized due to cancer took part in the study. Patients diagnosed with cancer and admitted to the inpatient oncology floor were interviewed, after giving their informed consent. The further inclusion criteria were as follows: a confirmed diagnosis of cancer, undergoing chemotherapy or radiotherapy treatment, willing to participate voluntarily in the study, and being physically able to complete the tests. The exclusion criteria were as follows: having another type of major mental or physical comorbidity that would confound responses and undergoing terminal treatment. Data were collected from participants individually, and the questionnaires were administered by an interviewer. The average time to complete the tests was 45 min. A total of 12 cases with incomplete data were dropped from the analyses. The final sample consisted of 129 patients, 74 women and 55 men. The age ranged 20–85 years (M±SD 61.1±12.59 years). The study received the approval of the Scientific Research Ethics Committee of the Institute of Psychology of the Catholic University of Lublin, Poland, as well as the committees operating in medical facilities where the research was conducted. After finishing the study, the patient was given the opportunity to comment on the survey.

Methods

Disease sheet

We used the questionnaire that was developed by Rybarski [38] to collect information on the course of the disease and the patient's attitude towards cancer. This questionnaire consists of questions about the socio-demographic variables, kind of cancer, the period of the patient's knowledge about the disease, and the form of care.

Centrality of Religiosity Scale

The *Centrality of Religiosity Scale* (CRS) measures the position of religious constructs system in the personality. This method consists of 15 items, which allow us to obtain a total score and 5 subscale scores:

- intellect, which measures cognitive, intellectual, confrontation with religious matters;
- ideology – the score obtained in this subscale shows how much a religious object is real to a person;
- private practice – this dimension includes individual, personal dialogue with God and prayer practices;
- religious experience – the questions of this subscale relate to situations in which a person has a sense of God's action;
- public practice, which ask about the frequency and subjective importance of a person's participation in religious services.

The total score is an indicator of the centrality of religious constructs in the personal constructs system [39]. The Polish adaptation of CRS has satisfactory psychometric properties: discriminant power of items ($0.70 \leq \varphi \leq 1$), internal consistency ($0.82 \leq \alpha \leq 0.93$) and absolute stability determined on a sample of 60 people within a 4-week interval ($0.62 \leq r_{tt} \leq 0.85$) [39]. Cronbach's α coefficient calculated in the research sample was 0.93, which is considered as very good. The reliability in the present study for particular subscales was: 0.82 for intellect, 0.90 for ideology, 0.88 for private practice, 0.86 for religious experience, and 0.82 for public practice.

Religious Comfort and Struggles Scale

The 24-items *Religious Comfort and Struggles Scale* (RCSS) consists of 4 subscales:

- religious comfort, which measures the support a person gets from the faith;
- fear/guilt, which measures preoccupation with ones sins, feeling guilty before God and situations of unforgiveness by God;

– negative emotions towards God, which measures negative feelings towards God, perceiving God as unjust, untrustworthy, distant, punishing, and abandoning people;
– negative social interactions related to religion, which measures the intensity of negative interaction with religious people [40].

The response options ranged from 0 ("not at all") to 10 ("very strong"). The reliability in the present study was: 0.97 for religious comfort, 0.79 for the total score of religious struggles, 0.78 for fear/guilt, 0.73 for negative emotions towards God, and 0.51 for negative social interactions related to religion.

Death Anxiety and Dying Distress Scale

The 15-item *Death Anxiety and Dying Distress Scale* (DADDS) measures the fear of death among patients diagnosed with cancer, patients with cancer metastases and advanced cancer, with a prognosis >6 months [38,41]. The DADDS focuses on the psychological and social concerns of death, the need to end relationships with loved ones, and the pain and suffering associated with the dying process itself. The response options ranged from 0 ("I did not feel any discomfort with the thought") to 5 ("I felt very strong discomfort"). Cronbach's α in this sample was 0.95.

Analytic methods

The SPSS software [42] was used for the analysis. Descriptive statistics are presented as means and standard deviations for quantitative variables. Pearson's correlation was used to establish the linear relationships between constructs measured by the CRS, RCSS, and DADDS. Regression analysis was used to test curvilinear (quadratic) relationships. The MEDCURVE macro [43] for SPSS was used for mediation analysis. The macro estimates indirect effects (IE) and bias-corrected confidence intervals. Mediation analysis was performed to examine religious comfort and struggles as mediators in the relationship between the centrality of religion and death anxiety, taking into account quadratic effects (Figure 1).

RESULTS

The results of this study are presented in the following order: the linear relationships between variables were inspected, then the curvilinear relationships were checked, and finally the mediations were tested.

Linear relationships

The correlation matrix and the descriptive statistics of the variables that we have used in this study are presented in Table 1. The centrality of religiosity strongly positively correlated with religious comfort, weakly positively cor-

Table 1. Descriptive statistics and Pearson's r correlations between the centrality of religiosity, religious comfort and struggles, and death anxiety among patients hospitalized due to cancer (N = 129); the research conducted in hospitals in Poland, 2017–2018

Variable	M	SD	Min.	Max	Pearson's correlation					
					1	2	3	4	5	6
1. Centrality	3.82	0.76	1.3	5.0						
2. Comfort	7.58	2.41	0.0	10.0	0.80***					
3. Struggles	1.63	1.23	0.0	5.2	0.07	0.08				
4. Fear/guilt	2.04	1.78	0.0	7.9	0.18*	0.19*	0.83***			
5. Negative emotions	0.83	1.24	0.0	6.7	–0.18*	–0.22*	0.71***	0.32***		
6. Interpersonal struggles	2.28	2.11	0.0	8.0	0.08	0.12	0.63***	0.24**	0.39***	
7. Death anxiety	1.71	1.21	0.0	5.0	0.12	0.13	0.34***	0.36***	0.15	0.16

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

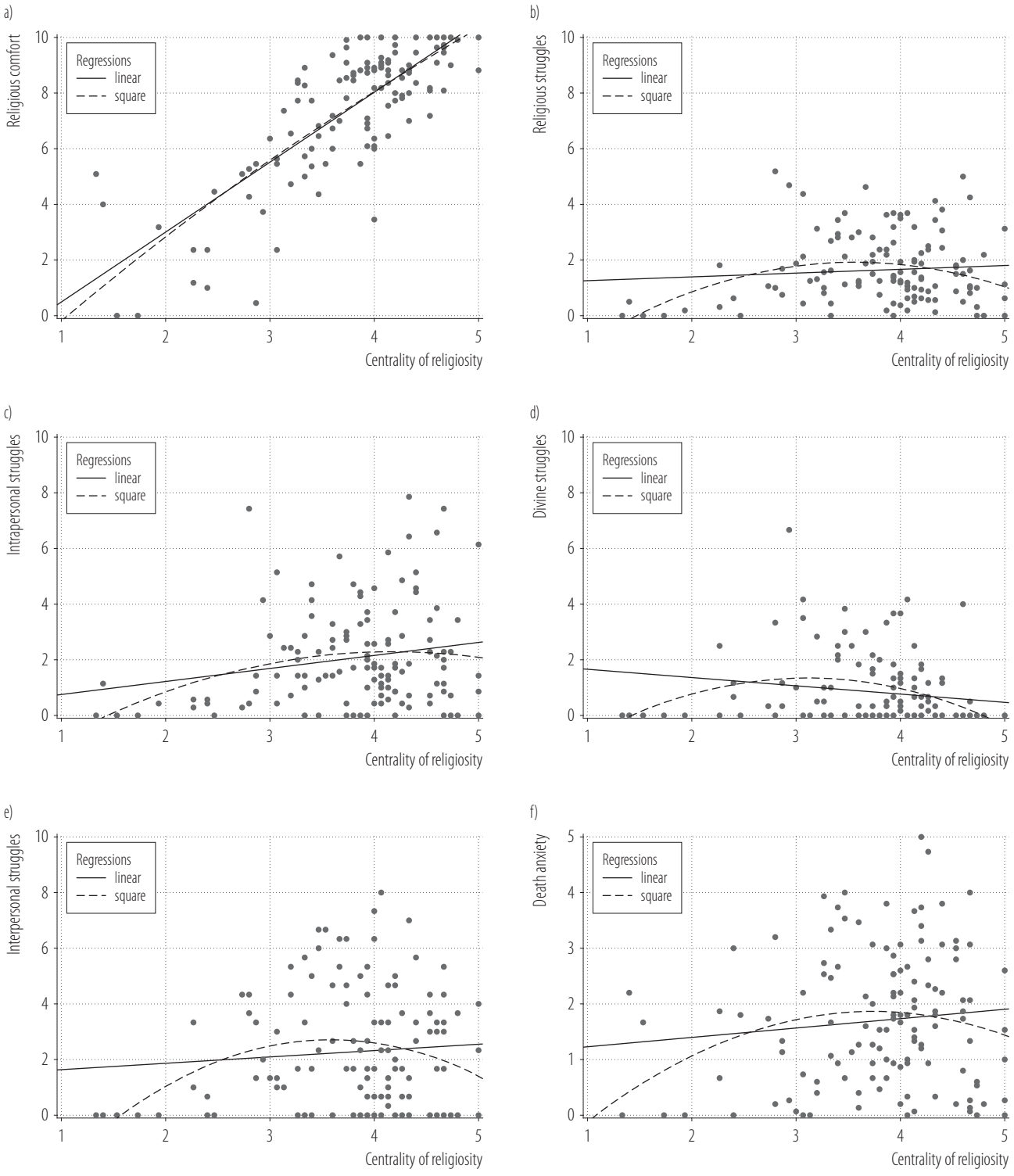


Figure 1. Scatterplots with fit lines for linear and square regressions of a) religious comfort, b) religious struggles, c) intrapersonal struggles, d) divine struggles, e) interpersonal struggles, and f) death anxiety on centrality of religiosity, among patients hospitalized due to cancer (N = 129); the research conducted in hospitals in Poland, 2017–2018

related with religious fear/guilt, and weakly negatively with negative emotions towards God. The death anxiety did not correlate linearly with the centrality of religiosity, but it correlated moderately positively with the overall score of the religious struggle and fear/guilt.

Curvilinear relationships

The curvilinear relationships between the variables were checked by building 2 regression models for each relation: linear and quadratic. These models were then compared in terms of the increase in explained variance after the addition of the quadratic term. Table 2 shows the results of linear and quadratic regressions of religious comfort and struggles, and death anxiety on centrality.

The relationship between the centrality of religiosity and religious comfort is better explained by a linear model than a quadratic model. Meanwhile, to explain all kinds of religious struggles, quadratic models were better suited than linear models. Therefore, the authors find that these relationships are curvilinear. In all cases, the nature of the relationship was as follows: with low centrality (subordinated or marginal religiosity), the intensity of religious struggles increases along with increasing centrality; while with high centrality (autonomous religiosity), the intensity of the struggle decreases with increasing centrality (Figure 1). The effect of the centrality of religiosity on the death anxiety is also nonlinear, and its shape is similar to the relationships mentioned earlier: increasing religiosity intensifies the anxiety among low-religious patients, and weakens among highly religious.

Mediation analyses

A series of mediation analyses were carried out. The curvilinear relationships between the main predictor, the explained variable, and the mediator were primarily assumed (full model). After fitting the full model, it was then constrained by reducing the relationships to a linear form in the case of no confirmation of the quadratic form. The results of these analyses are presented in Figure 2 and 3.

The results of the mediation analysis show that the indirect effect of the centrality of religiosity on death anxiety through comfort is insignificant. In addition, comfort does not directly explain death anxiety.

An indirect effect of centrality on death anxiety by religious struggles (total score) has been detected. The indirect effect was positive and significant when low centrality ($\theta = 0.18$, 95% CI: 0.08–0.34), but when high centrality it was negative ($\theta = -0.53$, 95% CI: –1.08–[–0.17]), and when average centrality there was no significant effect. The mediation was complete and the direct effect of centrality was non-significant.

When testing particular categories of struggles as mediators, it was found that the most substantial indirect effect was obtained for negative emotion towards God as mediator, and its nature was different than for global struggles: it was insignificant while centrality was low, but negative and significant when centrality was average ($\theta = -0.26$, 95% CI: –0.45–[–0.11]) and high ($\theta = -0.81$, 95% CI: –1.45–[–0.31]). The indirect effect of centrality via religious fear/guilt was significant for low centrality only ($\theta = -0.53$, 85% CI: –1.08–[–0.17]), and for average and high centrality were not significant. In contrast, the indirect effect of centrality mediated by social religious struggles was only significant when centrality was high ($\theta = -0.12$, 85% CI: –0.38–[–0.0002]).

The authors also checked whether the relationship between religious struggle and support, and death anxiety is linear or quadratic after taking the variation caused by the centrality (both linear and quadratic effects) into account. The authors found that it was non-significant for religious comfort, divine struggles, and interpersonal struggles, but quadratic for intrapersonal struggles, and a total of struggles.

DISCUSSION

The research presented in this paper aimed to analyze the relationships of the centrality of religiosity and death anxiety among cancer patients. In addition, the authors

Table 2. Summary of the linear and quadratic regressions of religious comfort and struggles and death anxiety on centrality (N = 129) among patients hospitalized due to cancer (N = 129); the research conducted in hospitals in Poland, 2017–2018

Variable dependent/ independent	Linear model					Quadratic model						
	B	SE	t	R^2	F(1, 127)	B	SE	t	R^2	F(2, 127)	ΔR^2	$F_\Delta(1, 126)$
Comfort				0.64	227.53***				0.64	113.41***	0.001	0.39
intercept	–2.11	0.655	–3.22**			–3.16	1.797	1.8				
centrality	2.54	0.168	15.08***			3.20	1.064	1.06**				
centrality^2						–0.10	0.154	0.15				
Struggles				0.01	0.65				0.11	7.84**	0.11	14.97***
intercept	1.19	0.556	2.15*			–4.01	1.443	1.44**				
centrality	0.11	0.143	0.8			3.38	0.855	0.85***				
centrality^2						–0.48	0.124	0.12***				
Fear/guilt				0.03	4.06*				0.06	4.30*	0.03	4.43*
intercept	0.47	0.795	0.59			–3.73	2.147	2.15				
centrality	0.41	0.204	2.01*			3.05	1.271	1.27*				
centrality^2						–0.39	0.184	0.18*				
Negative emotions				0.03	4.13*				0.14	10.01***	0.11	15.41***
intercept	1.93	0.554	3.48***			–3.32	1.438	1.44*				
centrality	–0.29	0.142	–2.03*			3.01	0.851	0.85***				
centrality^2						–0.48	0.123	0.12***				
Negative social				0.01	0.89				0.08	5.40**	0.07	9.86**
intercept	1.40	0.957	1.46			–6.00	2.532	2.53*				
centrality	0.23	0.246	0.94			4.88	1.499	1.50**				
centrality^2						–0.68	0.217	0.22**				
Death anxiety				0.01	1.71				0.04	2.92	0.03	4.10*
intercept	1.01	0.544	1.86			–1.76	1.472	1.47				
centrality	0.18	0.140	1.31			1.92	0.871	0.87*				
centrality^2						–0.26	0.126	0.13*				

B – regression weight; F – F-test statistics; FΔ – F-test of the change statistics; R2 – coefficient of determination; ΔR2 –coefficient of determination change; SE – standard error; t – t-test statistics.
* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

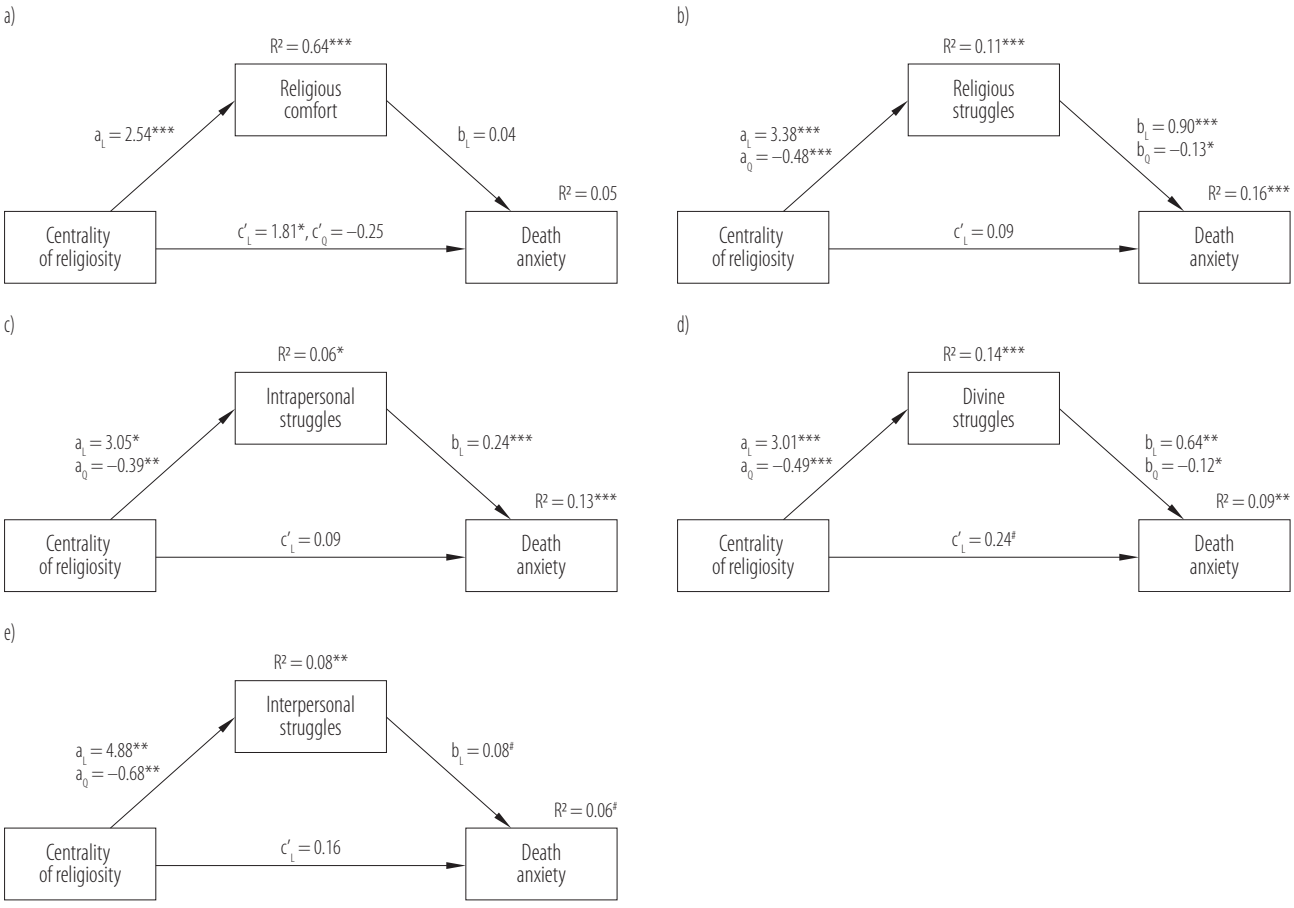
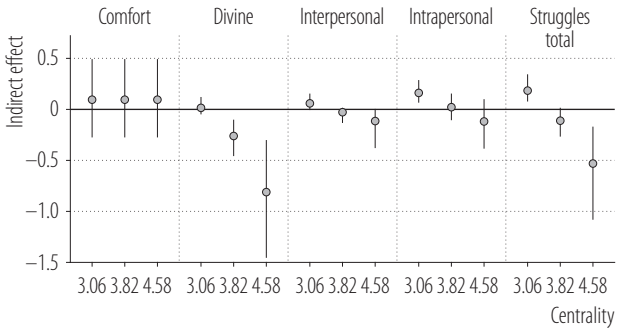


Figure 2. Path diagrams depicting analyses of mediation of centrality of religiosity effect on death anxiety by a) religious comfort, b) religious struggles, c) intrapersonal struggles, d) divine struggles, and e) interpersonal struggles among patients hospitalized due to cancer (N = 129); the research conducted in hospitals in Poland, 2017–2018

wanted to check whether this relationship is mediated by religious comfort and struggle.

Much data has confirmed the positive functions of religiosity on health in a general population (review see: [44–46]). Psychologists have also described the effects of religious struggles and comfort on various aspects of social adaptation, well-being and quality of life, both in the general population and in clinical samples [6]. The presence of religious struggles in people coping with cancer is a common phenomenon. They can take the form of a feeling of being abandoned by God, anger at God, or doubts about God's existence [47]. It was suggested that religiosity has significant associations with death anxiety, especially in the group of people struggling with cancer [48].

The authors hypothesized that the relationship between religiosity and death anxiety is curvilinear, consequently the highest death anxiety was expected among patients with an average centrality of religiosity. This hypothesis was confirmed in the research and is consistent with earlier research results. Various studies have found religiosity and affirmations of religious beliefs to provide buffers against the effects of mortality salience [21]. Reaserchers Heflick and Goldenberg [49] reported that the affirmation of afterlife beliefs mitigated mortality salience effects for nonbelievers, as well as for believers. Among the religious,



The point shows the effect size, with the whiskers showing its 95% confidence interval obtained by the bootstrap method.

Figure 3. The size of indirect effects of centrality of religiosity on death anxiety by comfort and particular categories of religious struggles at 3 levels of centrality of religiosity among patients hospitalized due to cancer (N = 129); the research conducted in hospitals in Poland, 2017–2018

greater religiosity reduces death anxiety, whereas among the non-religious, death anxiety increases religiosity or, perhaps more accurately, reduces irreligiosity [20].

The authors also hypothesized that religious comfort enhances the buffering effect of religiosity on death anxiety. This expected result was not revealed in the analyses. Why then is religiousness in an illness not always a person's resource? The discussion here should take into account the emotions experienced by cancer patients towards God. Research shows that many cancer patients experience negative emotions towards God [50]. Hence, one of the possible explanations for the situation in which religiosity is not supportive may be the awareness of being "unworthy" of obtaining help from God [51]. This situation may especially occur when a person with cancer perceives that their disease is a punishment for previous offences. A high level of felt guilt and fear towards God can effectively block a person from adopting positive religious coping strategies to deal with a difficult experience. It is likely that cancer and the associated physical weakness, loss of strength and pain are such a powerful experience that confronts person with the reality of dying that religion does not eliminate the experience fear of dying, although it may be a factor that gives meaning to dying [52]. Another explanation may be the content of the *Religious Comfort Scale*, in which there is no direct reference to death. The included sources of comfort may not be adequate to the terminal situation of the disease. It would therefore be advisable to include them in further research.

As expected, religious struggles had to weaken the buffering functions of religiosity in terms of the experienced death anxiety. While this direct function has not been stated because it was outlined earlier, the authors have pointed towards a different function. This research has shown that in a situation where religiosity is not an important value for a person suffering from cancer, the function of religiosity is not indifferent and can even be negative – it generates tensions, which in turn increase the death anxiety. The low level of the centrality of religiosity is not an indicator of unbelief but rather is an indicator of a faith subordinated to other values and areas of life. It may be argued that those who reject religion or do not take it as an important value will not experience many negative feelings about religion because it is a reality to which they do not attach much importance. This intuition is confirmed not only by the research but also by the results obtained by other authors [29,53]. The concept of so-called emotional atheism in particular suggests that the rejection of religion may not be a consequence of cognitive beliefs but of disappointment with God, which can generate religious struggles and a death anxiety.

The authors also hypothesized that high centrality of religiosity mitigates the level of particular religious struggles and thus lowers the death anxiety. The results of this research suggest that people with cancer, in whom religiosity occupies a central position in the system of personal constructs (high centrality of religiosity), experience less struggle, which in turn lowers their death anxiety. This result is consistent not only with the basic thesis of TMT but also with the large amount of empirical data confirm-

ing the positive function of religiosity in the event of an illness. Religious cancer patients seem to find in the area of religion a certain space of meaning that makes it easier for them to accept their own disease, reduces internal tensions or doubts, and leads to the final acceptance of the finality of life and the inevitability of their own death. This dependence was only observed in the case of high results of centrality of religiosity. People with a high centrality of religiosity probably solve the religious dilemmas or problems better than people with a low level of religiosity. It is also important to note the issue of religious struggle as a predictor of growth. Religious struggles in people with mature religiosity can strengthen the development process and thus reduce the negative affect associated with experiencing difficult circumstances such as cancer [54]. Data from a small number of studies suggest that experiencing religious struggles may be beneficial [29]. This is done through greater involvement of a person in religious life or by reinterpreting erroneous beliefs about faith and relationship to God. The various kinds of positive changes caused by religious struggles leading to greater religious satisfaction are referred to in the literature on the subject as spiritual growth [55].

Study limitations

The current study has observed several limitations. First, the research sample included people suffering from various types of cancer, varying in terms of age and duration of the disease. For this reason, the results of this study should not be generalized to other trials, especially in patients struggling with a specific type of cancer. Second, this research was carried out in a cross-sectional plan, which makes it difficult to draw causal conclusions. The direction of dependence was planned on the basis of theoretical assumptions. Third, the operationalization of the death anxiety by the self-report methods can also be a source of difficulties. Other researchers have already pointed to this problem [4] – the respondents more or less consciously did not want to confront the subject of death and dying. It is worth considering the possibility of measuring the death anxiety with other tools, such as semantic differential or projection methods.

CONCLUSIONS

The results obtained in this study may be a valuable source of practical conclusions on helping people suffering from cancer. They can be helpful for the family members of patients, medical staff, doctors, nurses, psychologists, or pastors. In the treatment of neoplastic disease, apart from medical interventions, it is important to use appropriate therapeutic activities, talk about such issues as experiencing the death anxiety, difficulties in relation to God. Cancer raises a number of questions, not only about the disease itself but also the tendency to blame yourself or God for the disease. It is worthwhile talking to the patient to broaden the horizon of seeing these matters, emphasizing that the disease is not a "punishment" for past behaviour, and that the patient only has a limited influence on the appearance of cancer. People with low religiosity require special help because they can experience fear, anger, God abandonment or a feeling of being punished by God. Being positively involved in religion can help the patient to distance themselves from their current problems. It also facilitates reflection on existential issues, returning to the most important, sometimes neglected values and redefining the meaning of life.

Author contributions

Research concept: Radosław Rybarski, Rafał P. Bartczuk, Jacek Śliwak

Research methodology: Beata Zarzycka

Collecting material: Radosław Rybarski

Statistical analysis: Rafał P. Bartczuk

Interpretation of results: Radosław Rybarski, Jacek Śliwak, Beata Zarzycka

References: Radosław Rybarski

REFERENCES

1. Ferlay J, Soerjomataram I, Dikshit R, Eser S, Mathers C, Rebelo M, et al. Cancer incidence and mortality worldwide: sources, methods and major patterns in globocan 2012. Int J Cancer. 2015;136(5):359–86.
2. Moorey S, Greer S. Cognitive behaviour therapy for people with cancer. 2nd revised edition. New York: OUP Oxford; 2002.
3. Eom CS, Shin DW, Kim SY, Yang HK, Jo HS, Kweon SS, et al. Impact of perceived social support on the mental health and health-related quality of life in cancer patients: results from a nationwide, multicenter survey in south korea. Psychooncology. 2013;22(6):1283–90. https://doi.org/10.1002/pon.3133.
4. Jong J, Halberstadt J. Death, anxiety, and religious belief: an existential psychology of religion. London: Bloomsbury Academic; 2016.
5. Pargament KI. The psychology of religion and coping: the theory, research, practice. New York; London: Guilford; 2001.
6. Exline JJ. Religious and spiritual struggles. In: Pargament KI, Exline JJ, Jones JW, editors. APA handbook of psychology, religion, and spirituality (Vol 1): Context, theory, and research. Washington, DC, US: American Psychological Association; 2013. p. 459–75.
7. Ellison CG, Lee J. Spiritual Struggles and Psychological Distress: Is There a Dark Side of Religion? Soc Indic Res. 2010;1;98(3):501–17. https://doi.org/10.1007/s11205-009-9553-3.
8. Huber S. Zentralität und Inhalt: ein neues multidimensionales Messmodell der Religiosität. Opladen: Leske + Budrich; 2003.
9. Soenke M, Landau MJ, Greenberg J. Sacred armor: Religion's role as a buffer against the anxieties of life and the fear of death. In: Pargament KI, Exline JJ, Jones JW, ed. APA handbook of psychology, religion, and spirituality (Vol 1): Context, theory, and research. Washington, DC, US: American Psychological Association; 2013. p. 105–22.
10. Greenberg J, Pyszczynski T, Solomon S. The Causes and Consequences of a Need for Self-Esteem: A Terror Management Theory. In: Baumeister RF, editor. Public Self and Private Self. New York, NY: Springer New York; 1986. p. 189–212. https://doi.org/10.1007/978-1-4613-9564-5_10.
11. Greenberg J, Simon L, Pyszczynski T, Solomon S, Chatel D. Terror management and tolerance: Does mortality salience always intensify negative reactions to others who threaten one's worldview? J Pers Soc Psychol.1992;63(2):212–20. https://doi.org/10.1037//0022-3514.63.2.212.
12. Vail KE, Rothschild ZK, Weise DR, Solomon S, Pyszczynski T, Greenberg J. A Terror Management Analysis of the Psychological Functions of Religion. Pers Soc Psychol Rev. 2010;1;14(1):84–94. https://doi.org/10.1177/1088868309351165.
13. Harding SR, Flannelly KJ, Weaver AJ, Costa KG. The influence of religion on death anxiety and death acceptance. Ment Health Relig Cult. 2005;1;8(4):253–61. https://doi.org/10.1080/13674670412331304311.
14. Hintze J, Templer DI, Cappelletty GG, Frederick W. Death depression and death anxiety in HIV-infected males. Death Stud. 1993;1;17(4):333–41. https://doi.org/10.1080/07481189308252629.
15. Henrie J, Patrick JH. Religiousness, Religious Doubt and Death Anxiety. Int J Aging Hum Dev. 2014;1;78(3):203–27. https://doi.org/10.2190/AG.78.3.a.
16. Jong J, Bluemke M, Halberstadt J. Fear of Death and Supernatural Beliefs: Developing a New Supernatural Belief Scale to Test the Relationship. Eur J Pers. 2013;1;27(5):495–506. https://doi.org/10.1002/per.1898.
17. Feifel H, Branscomb AB. Who's afraid of death? J Abnorm Psychol. 1973;81(3):282–8. https://doi.org/10.1037/h0034519.
18. Roff LL, Butkeviciene R, Klemmack DL. Death Anxiety and Religiosity Among Lithuanian Health and Social Service Professionals. Death Stud. 2002;26(9):731–42. https://doi.org/10.1080/07481180290106517.
19. Jong J. Death anxiety and religion. Curr Opin Psychol. 2021;40:40–4. https://doi.org/10.1016/j.copsyc.2020.08.004.
20. Jong J, Ross R, Philip T, Chang SH, Simons N, Halberstadt J. The religious correlates of death anxiety: a systematic review and meta-analysis. Religion Brain Behav. 2018;8(1):4–20. https://doi.org/10.1080/2153599X.2016.1238844.

21. Ellis L, Wahab EA. Religiosity and Fear of Death: A Theory-Oriented Review of the Empirical Literature. Rev Relig Res. 2013; 55(1):149–89. https://doi.org/10.1007/s13644-012-0064-3.
22. Leming MR. Religion and Death: A Test of Homans' Thesis. J Death Dying. 1980;10(4):347–64. https://doi.org/10.2190/PPDF-DT3R-4J9N-QUV2.
23. Wink P, Scott J. Does Religiousness Buffer Against the Fear of Death and Dying in Late Adulthood? Findings From a Longitudinal Study. J Gerontol B Psychol Sci Soc Sci. 2005; 60(4):207–14. https://doi.org/10.1089/jpm.2010.0536.
24. Huber S. Are Religious Beliefs Relevant In Daily Life? In: Religion inside and outside Traditional Institutions. Brill; 2007. p. 209–30. https://doi.org/10.7892/boris.73007.
25. Thuné-Boyle ICV, Stygall J, Keshtgar MRS, Davidson TI, Newman SP. Religious/spiritual coping resources and their relationship with adjustment in patients newly diagnosed with breast cancer in the UK. Psychooncology. 2013;22(3): 646–58. https://doi.org/10.1002/pon.3048.
26. Oman D, Thoresen CE. Do religion and spirituality influence health? In: Paloutzian RF, Park CL, editors. Handbook of the psychology of religion and spirituality. New York, NY: The Guilford Press; 2005. p. 435–59.
27. Salsman JM, Fitchett G, Merluzzi TV, Sherman AC, Park CL. Religion, spirituality, and health outcomes in cancer: A case for a meta-analytic investigation. Cancer. 2015; 121(21):3754–9. https://doi.org/10.1002/cncr.29352.
28. Sherman AC, Plante TG, Simonton S, Latif U, Anaissie EJ. Prospective study of religious coping among patients undergoing autologous stem cell transplantation. J Behav Med. 2009;32(1):118–28. https://doi.org/10.1007/s10865-008-9179-y.
29. Exline JJ, Park CL, Smyth JM, Carey MP. Anger toward God: Social-cognitive predictors, prevalence, and links with adjustment to bereavement and cancer. J Pers Soc Psychol. 2011;100(1):129–48. https://doi.org/10.1037/a0021716.
30. Zarzycka B. The internal structure of the Polish adaptation of the Religious Comfort and Strain Scale. Rocz Psychol. 2014;17(4):687–710.
31. Huber S, Huber OW. The Centrality of Religiosity Scale (CRS). Religions. 2012;3(4):710–24. https://doi.org/10.3390/rel3030710.
32. Zinnbauer BJ, Pargament KI, Scott AB. The emerging meanings of religiousness and spirituality: Problems and prospects. J Pers. 1999;67(6):889–919. https://doi.org/10.1111/1467-6494.00077.
33. Zarzycka B, Zietek P. Spiritual growth or decline and meaning-making as mediators of anxiety and satisfaction with life during religious struggle. J Relig Health. 2019;58(4):1072–86. https://doi.org/10.1007/s10943-018-0598-y.
34. Huber S. Kerndimensionen, Zentralität und Inhalt. Ein interdisziplinäres Modell der Religiosität. J Psychol. 2008;16(3).
35. Huber S, Allemand M, Huber OW. Forgiveness by god and human forgivingness: the centrality of the religiosity makes the difference. Arch Psychol Relig. 2011;33(1):115–34. https://doi.org/10.1163/157361211X565737.
36. Krok D, Zarzycka B. Interpersonal forgiveness and meaning in life in older adults: the mediating and moderating roles of the religious meaning system. Religions. 2021;12(1):37. https://doi.org/10.3390/rel12010037.
37. Zarzycka B, Bartczuk RP, Rybarski R. Centrality of Religiosity Scale in Polish Research: A Curvilinear Mechanism that Explains the Categories of Centrality of Religiosity. Religions. 2020;11(2):64. https://doi.org/10.3390/rel11020064.
38. Rybarski R. Religiosity, death anxiety and quality of life among people diagnosed with cancer. [PhD Thesis]: The John Paul II Catholic University of Lublin; 2019.
39. Zarzycka B. Skala Centralności Religijności Stefana Hubera. Rocz. Psychol. 2007;10(1):133–57.
40. Yali AM, Sanderson W, Exline J. Guilt, discord, and alienation: The role of religious strain in depression and suicidality. J Clin Psychol. 2000;56(12):1481–96. https://doi.org/10.1002/1097-4679(200012)56:12%3C1481::AID-1%3E3.0.CO;2-A.
41. Krause N. Trust in God, Forgiveness by God, and Death Anxiety. J Death Dying. 2015;72(1):20–41. https://doi.org/10.1177/0030222815574697.

42. IBM Corporation. IBM SPSS Statistics for Windows. Armonk, NY: IBM Corporation; 2017.
43. Hayes AF. Introduction to mediation, moderation, and conditional process analysis: a regression-based approach. 2nd ed. New York: The Guilford Press; 2018.
44. Hill PC, Pargament KI. Advances in the conceptualization and measurement of religion and spirituality: Implications for physical and mental health research. Am Psychol. 2003;58(1):64–74. https://doi.org/10.1037/0003-066X.58.1.64.
45. Koenig H. Handbook of religion and mental health. Amsterdam: Elsevier; 2007.
46. Larson DB, Larson SS. Spirituality's potential relevance to physical and emotional health: a brief review of quantitative research. J Psychol Theol. 2003;31(1):37–51. https://doi.org/10.1177/009164710303100104.
47. Pargament KI, Koenig HG, Tarakeshwar N, Hahn J. Religious Coping Methods as Predictors of Psychological, Physical and Spiritual Outcomes among Medically Ill Elderly Patients: A Two-year Longitudinal Study. J Health Psychol. 2004;9(6):713–30. https://doi.org/10.1177/1359105304045366.
48. Edmondson D, Park CL, Chaudoir SR, Wortmann JH. Death without God: Religious struggle, death concerns, and depression in the terminally ill. Psychol Sci. 2008;19(8):754–8. https://doi.org/10.1111/j.1467-9280.2008.02152.x.
49. Heflick NA, Goldenberg JL. No atheists in foxholes: Arguments for (but not against) afterlife belief buffers mortality salience effects for atheists: Atheism and mortality salience. Br J Soc Psychol. 2012;51(2):385–92. https://doi.org/10.1111/j.2044-8309.2011.02058.x.
50. Stauner N, Exline JJ, Grubbs JB, Pargament KI, Bradley DF, Uzdavines A. Bifactor models of religious and spiritual struggles: distinct from religiousness and distress. Religions. 2016;7(6):68. https://doi.org/10.3390/rel7060068.
51. Zarzycka B, Śliwak J, Krok D, Ciszek P. Religious comfort and anxiety in women with cancer: The mediating role of hope and moderating role of religious struggle. Psychooncology. 2019;28(9):1829–35. https://doi.org/10.1002/pon.5155.
52. Greenberg J, Arndt J, Simon L, Pyszczynski T, Solomon S. Proximal and distal defenses in response to reminders of one's mortality: evidence of a temporal sequence. Pers Soc Psychol Bull. 2000;26(1):91–9. https://doi.org/10.1177/0146167200261009.
53. Wood BT, Worthington Jr. EL, Exline JJ, Yali AM, Aten JD, McMinn MR. Development, refinement, and psychometric properties of the Attitudes Toward God Scale (ATGS-9). Psycholog Relig Spiritual. 2010;2(3):148–67. https://doi.org/10.1037/a0018753.
54. Zarzycka B. Zmagania religijne. Uwarunkowania i funkcje. Lublin: Wydawnictwo KUL; 2017.
55. Exline JJ, Rose ED. Religious and spiritual struggles. In: Paloutzian RF, Park CL, editors. Handbook of the psychology of religion and spirituality. New York, NY: The Guilford Press; 2005. p. 315–30.