



Psychometric Characteristics of the Persian Version of the Revised Fear of Personal Death Scale

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Abstract

Background: The thought of one's own death is a fearful subject that is not easy to deal with. Fear of death can have various psychological effects on a person. Advances have been made in the measurement of death concerns leading to the development and validation of several scales as it varies according to social and cultural conditions.

Objectives: This study aimed to evaluate the psychometric properties, content validity, concurrent validity, and factor structure of a Persian version of the revised Fear of Personal Death Scale (FPDS-R) in an Iranian population.

Methods: This study was conducted on residents of Tehran, Iran, using the online version of the FPDS-R, Beck Depression Inventory-Second Edition, and Rosenberg Self-esteem Scale questionnaires. Finally, data analysis was performed using SPSS software (version 21). Moreover, the Pearson correlation coefficient and confirmatory factor analysis (CFA) were used for data analysis.

Results: Among 313 individuals who completed the study, the fit of the five-factor model in CFA was confirmed using standard indices (root mean square error of approximation = 0.06; chi-square/df = 2.34). Reliability was confirmed by calculating Cronbach's alpha (> 0.8). Cronbach's alpha values for the reliability of "deprivation", "loss of self", "forgotten", "other-oriented" and "mystery" were 0.93, 0.88, 0.81, 0.86, and 0.88, respectively. The findings of this study confirmed the five factors model developed by Burris and Bailey (2009) on Iranian sample.

Conclusions: The Persian version of the FPDS-R in Iranian society has good reliability and validity and can be used for personality research, identification and treatment of clinical disorders, and cross-cultural comparisons in this population.

Keywords: Death, Necrophobia, Psychology, Psychometrics, Reliability and Validity

1. Background

Understanding death is one of the most important human queries, which is unresolved until the present (1). The fact that everyone will inevitably face death at one point in life can cause significant stress and anxiety in individuals (2). The anxiety about one's own death might manifest in some individuals as a continuous and abnormal fear (3). This anxiety, as the initial component of death, includes a whole host of personal views, such as general fear, threat, worries, sense of discomfort, and other stressful reactions (4). With the advent of coronavirus disease 2019 (COVID-19), the overall anxiety in society is increased, which is to some extent due to the disease-related deaths reported to be 4.3% (5). Dadfar et al. described fear of death as a negative and threatening feeling that conjures up when the individual thinks about one's own death. This is known as a

fundamental fear and a broader part of psychiatric conditions, including clinical anxiety and depressive disorders (1).

The terms "fear of death" and "death anxiety" are often used interchangeably in the literature (6), and cross-cultural studies have proposed important methods for the determination of many unique phenomena, including death anxiety (7). Over the past 50 years, numerous advances have been made in personal views of death and assessment of individual worries about it, leading to the development and validation of some scales (8). Applying these scales enables us to improve upon the current views and applicability of the existing assessment tools to the concept of dying.

Death might be perceived differently in various cultures. These differences might be due to individual mental and emotional characteristics, culture or belief systems,

which in turn form our views of death either consciously or unconsciously (9). Charmaz (10) believes that the role of culture or religion is to help individuals interpret the reality of death in a way to allay their fears and direct their attention away from the disabling sense of hopelessness. Therefore, it is logical to expect that fear of death might not be the same in various societies, considering their social and cultural characteristics. To date, several self-reporting questionnaires and scales have been developed and used for the assessment of death anxiety and its influence on psychological health (11); there are more than 10 measures regarding death studies currently available.

The scales for the assessment of death anxiety are either unidimensional or multidimensional. The most well-known scale for death anxiety is Templer unidimensional scale (12). Furthermore, several death anxiety scales have been used and validated in psychological studies in Iran, including the Templer scale, Collett-Lester Fear of Death Scale (CL-FODS), Reasons for Death Fear Scale, and Arabic Scale of Death Anxiety. Since death is a multidimensional concept, it is not easy to describe it briefly. A tool is required capable of addressing death and individuals' reactions to it from different perspectives.

Recently, multidimensional scales of death anxiety have become more widely recognized (13). Currently, several multidimensional scales exist, with the most practical and applied ones including the CL-FODS (14), the Multidimensional Fear of Death Scale (15), and the Fear of Personal Death Scale (FPDS) by Florian and Kravetz (16). The FPDS by Florian and Kravetz is a self-report scale based on the multidimensional fear of death anxiety model. Multidimensional scales show the qualitative differences in the meaning individuals might attribute to their own mortality. Knowledge of such differences might be essential to comprehend the complexity of fear of death (17). Therefore, such scales are valuable instruments for cross-cultural studies and comparisons among Abrahamic religions and expansion of our knowledge on the factors that might be related to fear of personal death.

There are convincing reasons to select and translate the revised version of the Fear of Personal Death Scale (FPDS-R), modified by Burris and Bailey (18), into the Persian language and to study its psychometric properties. Firstly, the FPDS-R is multidimensional; however, its emphasis is on one's own death, which is in contrast to the CL-FODS, in which half of the items are concerned with the death of others (19). The second reason for selecting the FPDS-R was that this questionnaire sees dying as the end of one's own life (i.e., anxiety about self-annihilation or existential fear of death), which is distinctively different from other concepts associated with death (13), which was of our interest to measure this aspect of fear in the Ira-

nian Muslim population. Thirdly, this scale offers a more accurate factor structure about the fear of personal death than the Holter scale. The Holter 8-factor questionnaire is also a multidimensional scale; nevertheless, it is not based on a specific theory (20). The Holter scale was used in Arab Muslim students who lived temporarily in the United States, which showed that being a Muslim might have prevented or minimized the fear of death in the believers of that religion. Long (21) have mentioned that "With our sample, Mohammedanism might simply preclude certain fears pertaining to death and dying that Americans have been found to hold". Therefore, the Holter scale might not be appropriate for individuals belonging to either Arab or Iranian culture only because a common religion exists among them. Furthermore, individuals' mentality is complex, containing a whole host of beliefs originating from their culture and religion, if not also other perspectives (22).

The model of the FPDS, originally proposed by Florian and Kravetz (16), suggests that the overt expression of fear of death is composed of three components and six factors. Components comprising the intrapersonal, interpersonal, and transpersonal consequences of death were considered the theoretical base. Two factors, namely deprivation and loss of self, correspond to the intrapersonal component of fear of death. The interpersonal component shows concerns related to attachment relationships, including fear of loss of one's identity related to forgotten and other-oriented factors. The transpersonal component is reflected in fear of the unknown nature of death, represented by the mystery and punishment factor.

The FPDS revised by Burris and Bailey in 2009 (18), which is validated by the current study, minimizes the ambiguities that occurred initially during its translation from the original Hebrew version to English. Of note, Burris and Bailey (18) have pointed out that one factor (i.e., punishment or retribution in the hereafter) has been omitted in the English version since it has been considered an established fact; this might imply the assumption that humans' awareness and most probably identities will endure after death, leading to the omission of the aforementioned factor. Upon a second review of the questionnaire, it was clear that the sixth factor was related to the acceptance of the idea of retribution in the hereafter, with a factor loading of 0.59; therefore, its omission was logically justified.

The Beck Depression Inventory (BDI) and Rosenberg Self-esteem Scale (RSES) questionnaires were used to assess the concurrent validity of the scale in the present study. A positive correlation was expected between depression and death anxiety. However, there was a negative relationship between self-esteem and death anxiety. Based on terror management theory, self-esteem is believed to serve as a

buffer against death anxiety (23), and currently, a common agreement exists on the role of self-esteem (24, 25). Evidently, severe death anxiety is usually associated with psychiatric disorders, such as clinical depression and generalized anxiety (26, 27). In epidemiological studies, death anxiety has been confirmed in patients with severe clinical depression (28).

Considering the above-mentioned literature review regarding the paucity of such studies in the Iranian population, the present study aimed to evaluate the psychometric properties, factor structure, and concurrent validity of the FPDS-R in a typical Iranian population. For this purpose, the FPDS-R was systematically translated into the Persian language, and its validity, factor structure, and reliability were evaluated.

2. Objectives

To date, such a study has not been conducted on an Iranian population; therefore, the authors believe this study contributes positively to the available literature on individual personality and identity. The aforementioned measures would be helpful in clinical assessments and interventions.

3. Methods

3.1. Study Participants and Recruitment and Setting

This descriptive correlational study was performed on recruited volunteer subjects through convenient sampling from individuals residing in Tehran, Iran, including students of Tehran and Alameh Tabatabaee universities, through online contact due to the COVID-19 pandemic within April and November 2020. Initially, the scale was tested on six volunteers to ensure that the items were clearly understandable by the users and to detect potential ambiguities. For the purpose of studying construct validity, confirmatory factor analysis (CFA) was performed on the Persian version of the FPDS-R by AMOS software (version 22). The Pearson's correlation and Cronbach's alpha coefficients of the tool were calculated by SPSS software (version 21).

3.2. Sample Size and Sampling Method

The initial sample of 313 participants aged 18-71 years underwent the final implementation of the FPDS-R. This number of samples was taken into consideration in accordance with Meyers et al.'s advice (29). They believe that the number of 313 individuals is appropriate for the component analysis of this scale, which has 30 items, and that the

subject should be taken into account roughly 10 times for each item.

The inclusion criteria included an age range of 18 - 71 years, undergrad students or above, and informed consent to participate in the study. The exclusion criteria included having a serious mental illness, such as psychosis or bipolar disorder, taking antipsychotic medications, having a suicide history, drug or stimulant addiction, the existence of several physical conditions (e.g., cancer, lupus, multiple sclerosis and acquired immunodeficiency syndrome)

The number of subjects was determined statistically based on the sample size recommended by Meyers et al. (29).

3.3. Translation Process

The translation of the FPDS-R questionnaire followed the World Health Organization protocol and went through a systematic translation and back-translation for accuracy and content validity. Firstly, the original English version was translated into Persian by the authors. Secondly, this version was back-translated into English by an Iranian psychology professor residing in the United States for the past 40 years. As part of the scrutiny, initially, two expert psychologists and academicians from the Department of Psychology of University of Tehran reviewed the questionnaire's contents and verified the validity and the ease of comprehension of each item. Then, the semi-final questionnaire was reviewed by another five psychology professors from the same university (including two clinical psychologists, two general psychologists, and one health psychologist) for content validity and feedback. Upon receiving their feedback, the questionnaire was revised minimally, and the final version was saved on a computer. The concurrent validity of the final Persian scale was assessed using the RSES and BDI.

3.4. Instruments, Validity, and Reliability

Primarily, each subject reviewed the study protocol and signed an informed consent form. Subsequently, the subjects filled out the online study's main questionnaire (i.e., the Persian version of the FPDS-R). Before responding to the questionnaire's items, the subjects were asked to record demographic information, such as gender, economic status, and educational level. However, they were told not to mark their names or identities anywhere in the questionnaire at all; therefore, anonymity and confidentiality were guaranteed.

The reliability assessment of the data on death anxiety, performed among the university's PhD students ($n = 30$) in psychology and undergraduate students from Tehran University of Arts, resulted in a Cronbach's alpha of 0.9,

demonstrating a good internal consistency. The obtained findings indicated that the questionnaire's items had a high correlation with each other, representing their consistent underlying construct.

3.5. Revised Version of Fear of Personal Death Scale

This 30-item validated Persian questionnaire was the equivalent of the original FPDS-R. It asked the subjects to indicate their choice about their own death on a Likert scale of 1-7, with a 1 (totally incorrect) to 7 (totally correct) response format. The Cronbach's alpha coefficients for the five subscales were excellent (deprivation = 0.93, forgotten = 0.87, other-oriented = 0.87, mystery = 0.91, and loss of self = 0.90) (18).

3.6. Rosenberg Self-esteem Scale

The RSES (1965) measures overall self-esteem and personal value, including 10 general items that measure life satisfaction and a good sense of self (30). The RSES is one of the most common scales for measuring self-esteem (30, 31). In this questionnaire, the subject is asked to answer the questions accurately on a 4-point Likert scale from strongly agree to strongly disagree. The scores on this scale ranged from 10 to 40, with higher scores indicating higher self-esteem. This scale includes five positive items (numbers 1-5) and five negative items (numbers 6-10). Recent discussions have focused on using the RSES as a single structure or two-factor structure. Sharratt et al. (32) believe the two-factor structure is a better way to apply this scale in social studies. A study by McKay et al. (33) also confirmed the two factors of this structure. Kielkiewicz et al. (34) reported Cronbach's alpha coefficients of 0.66 and 0.79 for positive and negative self-esteem, respectively. In this study, internal consistency was calculated using Cronbach's alpha coefficient for positive self-esteem (0.85) and negative self-esteem (0.80).

3.7. Beck Depression Inventory-Second Edition

This 21-item questionnaire evaluates the person's depression severity with excellent validity, reliability, and Cronbach's alpha coefficients of 0.92 and 0.93 when tested on outpatients and students, respectively (35). Each item is scored from 0 to 3, with the maximum potential score upon the completion of the questionnaire reported as 63 (36). The items are categorized under three sections, including emotional, cognitive, and physical symptoms. In the present study, internal consistency through Cronbach's alpha coefficient was calculated at 0.88.

4. Results

4.1. Subjects' Demographic Features

The current study was conducted mainly to determine the psychometric properties of the FPDS-R in a Persian-speaking population. This study was performed on 313 participants aged 18-71 years (mean: 35.12; standard deviation: 12.06), including 230 women (73.5%) and 83 men (26.5%). Slightly over half of the participants were single ($n = 171$; 54.6%), and the rest were married ($n = 142$; 45.34%). Regarding their educational status, 16% of the subjects ($n = 50$) had a high school diploma, and the rest completed their university education with a Bachelor of Arts or a Bachelor of Science ($n = 111$; 35.5%), master's degree ($n = 105$; 33.5%), or doctoral levels ($n = 47$; 15%), respectively. Before implementing CFA, the assumptions of Keiser-Meyer-Olkin sampling adequacy and Bartlett's test of sphericity were met ($\chi^2 = 6202.915$) ($P < 0.001$). The analysis indicated that the scale's items were appropriate and capable of measuring the factors.

4.2. Confirmatory Factor Analysis

The CFA, consisting of five latent variables, was employed to determine the fitness of the scale for the experimental data. The fitness of the final CFA was acceptable (chi-square/df = 2.345; comparative fit index [CFI] = 0.913; incremental fit index [IFI] = 0.914; Tucker-Lewis index [TLI] = 0.902; root mean square error of approximation [RMSEA] = 0.066). Table 1 shows details of the fitness indices.

To determine the fitness of the hypothesized model, the absolute and comparative fit indices were used, of which RMSEA and standardized root mean square residual (SRMR) account for the most popular ones. The ideal model fitness value for RMSEA should be less than 0.1 and preferably less than 0.08. For SRMR fitness, the value must be less than 0.08 (37). For CFI, TLI, and IFI indices, values higher than 0.9 indicate an acceptable model; however, values higher than 0.95 account for good fitness (37). The CFA was carried out using AMOS software (version 22).

As observed in Table 2, based on the values obtained from the t-test, all of the items under the five factors (i.e., deprivation, loss of self, forgotten, other-oriented, and mystery) were higher than 1.96, which indicates the statistical significance of all paths ($P \leq 0.001$) (Table 2).

4.3. Evaluation of Validity and Correlation

The concurrent validity of the Persian version of the FPDS-R was evaluated. The correlation between each of the five factors (i.e., deprivation, loss of self, forgotten, other-oriented, and mystery) with depression or positive and negative self-esteem was determined. As shown in Table 3,

Table 1. Goodness of Fit Indices for Default Model

Goodness of Fit Indices	Chi-square	Chi-square/df	RMSEA	SRMR	CFI	IFI	TLI
Five-factor model	905.260	2.345	0.066	0.080	0.913	0.914	0.902
Acceptance cutoff	-	< 3	< 0.08	< 0.08	> 0.90	> 0.90	> 0.90

Abbreviations: RMSEA, root mean square error of approximation; SRMR, standardized root mean square residual; CFI, comparative fit index; IFI, incremental fit index; TLI, Tucker-Lewis index.

Table 2. Standardized Coefficients and Significance of Factor Loadings

Factors and Items	β	b	Se	t	P-Value
Deprivation					
9	0.597	0.780	0.075	10.346	0.001
4	0.603	0.842	0.081	10.450	0.001
8	0.583	0.778	0.077	10.155	0.001
7	0.682	0.941	0.079	11.893	0.001
11	0.788	1.115	0.081	13.831	0.001
3	0.809	1.240	0.087	14.224	0.001
5	0.742	1.042	0.080	12.987	0.001
10	0.798	1.156	0.082	14.027	0.001
6	0.858	1.223	0.081	15.122	0.001
2	0.711	0.979	0.046	21.096	0.001
1	0.730	1		Reference indicator	
Loss of self					
30	0.544	0.532	0.049	10.868	0.001
29	0.491	0.528	0.055	9.526	0.001
28	0.743	0.770	0.043	17.789	0.001
27	0.944	1.021	0.033	31.122	0.001
26	0.958	1		Reference indicator	
Forgotten					
13	0.685	1.291	0.149	8.683	0.001
25	0.641	1.163	0.139	8.390	0.001
15	0.393	0.689	0.119	5.795	0.001
14	0.669	1.334	0.108	12.399	0.001
12	0.568	1		Reference indicator	
16	0.759	1.468	0.160	9.178	0.001
Other-oriented					
20	0.688	0.883	0.070	12.634	0.001
19	0.796	0.911	0.061	15.010	0.001
17	0.781	0.947	0.064	14.691	0.001
18	0.840	1		Reference indicator	
Mystery					
21	0.688	0.728	0.051	14.337	0.001
22	0.764	0.844	0.050	16.922	0.001
24	0.900	0.969	0.043	22.402	0.001
23	0.903	1		Reference indicator	

there was a positive correlation between each of the four variables (i.e., deprivation, loss of self, forgotten, and mystery) and depression, with the correlation coefficients reported as $r = 0.16, 0.25, 0.26$, and 0.20 , respectively ($P < 0.01$) (Table 3).

Table 3. Correlations of Depression, Positive Self-esteem, and Negative Self-esteem with Death Concerns^a

Variables	Depression	Positive Self-esteem	Negative Self-esteem
Deprivation	0.162**	-0.003	0.123*
Loss of self	0.250**	-0.106	0.232**
Forgotten	0.257**	-0.151**	0.248**
Other-oriented	0.045	0.028	0.029
Mystery	0.197**	-0.067	0.204**

^a * $P < 0.05$; ** $P < 0.01$

4.4. Positive and Negative Self-esteem

There was a negative correlation between forgotten and positive self-esteem ($r = -0.15$; $P < 0.01$). In addition, there was a positive correlation between the four variables and negative self-esteem, with $r = 0.12, 0.23, 0.25$, and 0.20 , respectively ($P < 0.01$ and $P < 0.05$). Depression correlated positively with four factors of deprivation, loss of self, forgotten, and mystery, with $r = 0.16, 0.25, 0.26$, and 0.20 , respectively ($P < 0.01$).

4.5. Reliability Assessment

In the next phase of the study, the reliability of the scale was evaluated on the main sample ($n = 313$) for each of the factors ($r > 0.7$). The Cronbach's alpha values for deprivation, loss of self, forgotten, other-oriented, and mystery were $0.93, 0.88, 0.81, 0.86$, and 0.88 , respectively, which confirmed their appropriate reliability according to Hair et al. (38). Of note, the three versions of the questionnaire in Hebrew, English, and Persian languages resulted in similar Cronbach' alpha values.

5. Discussion

This study was conducted to evaluate the validity, reliability, and factor structure of the Persian version of the multidimensional FPDS-R in an Iranian population. For the reliability assessment, this study used internal consistency through Cronbach's alpha coefficients. Nevertheless, CFA was employed for the construct validity. Several other studies used Cronbach's alpha coefficients and exploratory factor analysis (EFA) and CFA for the reliability and validity assessment of the questionnaire (39). Finally, concurrent evaluations were assessed using the BDI and RSES.

5.1. Consistency with Earlier Studies

The factor structure obtained in the current study was similar to that of Buriss and Bailey (18). Regarding fitness indices of the present study on five factors proposed by Burris and Bailey (18), it is concluded that the same factors are yielded. This finding can be interpreted as the similarity of the beliefs of Muslims, Christians, and Jews about personal death based on the commonality of Abrahamic religions.

The BDI and RSES questionnaires were used to evaluate the concurrent validity of the FPDS-R. Consistent with the findings of previous studies, the five factors and the components of the original scale (i.e., FPDS-R) have a positive relationship with depression (40), supporting the fact that psychological conditions might exist concurrently with severe death anxiety in individuals (41, 42). Earlier studies confirm the presence of death anxiety in individuals with depression. Individuals who were depressed showed higher than average scores on the Death Anxiety Scale. Researchers also found that fear of death is related to depression and mental suffering, especially in the elderly (43, 44). According to a study by Khaki et al., depression can also significantly affect the quality of life in the elderly. Decreased quality of life can have several adverse consequences, such as diminished life expectancy (45).

5.2. Self-esteem and Death Anxiety

Based on the clinical findings and terror management theory, cultural worldview and self-esteem serve as a buffer against anxiety about one's own death (23, 46, 47). Furthermore, the research literature based on self-reports provides ample evidence that positive self-esteem is an effective protective mechanism against death anxiety (48). Nevertheless, individuals with low self-esteem often experience deep death anxiety. Experimental evidence supports the fact that individuals with a high sense of self-esteem do not show deep death anxiety upon watching murder videos and death scenes, unlike those with low self-esteem (49, 50). Additionally, Chung et al. have provided evidence that students with positive self-esteem rarely experience death anxiety (51).

The findings of the current study also demonstrated that negative self-esteem has a significantly positive correlation with deprivation, loss of self, forgetting, and mystery. The aforementioned findings are consistent with those reported by several earlier studies (52, 53). According to the study by Waters and Moore, deprivation is harmful to self-esteem in both men and women (54). It is clear that individuals with deprivation have to perform some works and activities that are not suitable for them and consequently have a negative effect on their self-esteem. In addition, Tice concluded that there is a positive correlation

between self-esteem and mystery. Individuals with high self-esteem show no mystery; they think they are good at most things, and therefore they would like others to know about their activities. They would like to achieve outstanding, exceptional things. On the other hand, those with low self-esteem are cautious with a high fear rate and therefore are self-protected (55).

The present study also found a negative correlation between positive self-esteem and the factor of forgetting. The existence of this relationship is in line with the results of a study by Chung et al. (51) in this field which showed that students who had high self-esteem experienced less death anxiety. However, the absence of a relationship between other components of death anxiety and self-esteem is not in line with the results of other studies; that is, high and positive self-esteem in the present study's sample did not have a protective effect on the individual's sense of death anxiety. To explain this, the concurrence of this study with the COVID-19 pandemic and the elevated level of death anxiety subsequently might have affected the moderating effect of self-esteem on reducing death anxiety and the subjects' responses. The findings reported by Soleimani et al. in an Iranian sample indicated that the subjects with positive self-esteem experience deeper death anxiety than those with negative self-esteem (56). To explain these inconsistencies, it should be considered that death anxiety is a multidimensional concept linked to individuals' dominant culture, thereby influencing their belief about death (22, 57). To elucidate this phenomenon, further qualitative and quantitative studies are warranted in Muslim communities, such as Iran, which are distinctively different from the studies of the West.

5.3. Limitations of the Study

The fact that all of the subjects were recruited from the same city might be one of the limitations of the current study. Therefore, the findings might not be generalizable to other populations in Iran or neighboring countries. Another limitation was the lack of test and retest reliability of the findings in the study subjects. This study was conducted online due to the COVID-19 pandemic, which might have negatively affected the subjects and the accuracy of the responses since they could not ask questions regarding the items. The last limitation was not performing EFA on the Persian version of the FPDS-R in this study.

5.4. Recommendations for Future Studies

The results showed that there is only a significant inverse relationship between the component of "forgotten" and positive self-esteem (positive items); nevertheless, the lack of relationship between other components of death

anxiety and self-esteem is not consistent with the results of other studies; that is, high and positive self-esteem in the present study's sample did not have a protective effect against death anxiety. However, the results of Soleimani et al.'s (56) study in the Iranian sample indicated a positive relationship between these two variables, which is also contrary to the findings of other studies. Therefore, it is suggested to repeat this study in the Iranian sample because the relationship might be influenced by other factors, especially cultural and religious factors (57). Conducting only CFA on the sample could limit the generalizability of the results and scope of the study. As a result, it is recommended to perform EFA on another independent sample in the future to examine the factors' stability. The current study was conducted on healthy participants. It is recommended to plan similar studies on individuals with clinical conditions and the elderly in a reproducible manner.

5.5. Conclusions

Based on the findings, the Persian version of the FPDS-R has the validity and capability required for the psychometric assessment of individuals' views on their own death in an Iranian sample. The FPDS-R consists of 30 items. The analytical steps identified five subscales, including deprivation (11 items), loss of self (5 items), forgotten (6 items), other-oriented (4 items), and mystery (4 items). The translated version was found to have a similar structure to the revised version by the Burris and Bailey questionnaire and a high level of validity and reliability. The Persian version of the FPDS-R had a similar Cronbach's alpha to those in the original Hebrew and revised English versions. This tool is also helpful for the identification and part of management of psychological disorders and cross-cultural comparisons of various communities. The five factors and the components of this version, including deprivation, loss of self, forgotten, other-oriented, and mystery, have a positive relationship with depression. In this study, negative self-esteem had a positive relationship with factors including deprivation, loss of self, forgetting, and mystery. However, positive self-esteem did not have a protective effect on the individual's sense of death anxiety; nevertheless, positive self-esteem had a negative correlation with forgetting.

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the Declaration of Helsinki, in dealing with human subjects and keeping their information in the strictest of confidentiality. This manuscript was extracted from a doctoral thesis submitted by the first author.

Footnotes

Authors' Contribution: Azadeh Saffarzadeh as a Ph.D. student in Health Psychology, she had an important role in all stages of doing and writing the research. Abbas Rahiminezhad as corresponding author helped in writing, revising and supervising the results. Hadi Bahrami Ehsan contributed as supervisor in designing and implement of the proposal. Azam Nofesti advised in the clinical aspect of the research. Nazila Shahmansouri helped in sampling and advising for excluding and including the participants. Keyvan Salehi advised in statistical analysis.

Conflict of Interests: Abbas Rahiminezhad is a member of the editorial board of Progress in Psychiatry and Behavioral Sciences (Formerly Iranian Journal of Psychiatry and Behavioral Sciences). There was no conflict of interest whatsoever with any internal or external entity in the course of conducting this study.

Ethical Approval: The study protocol was approved by the Research Ethics Committee, Department of Psychology, University of Tehran (ethics code: IR.UT.PSYEDU.REC.1399.007).

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Informed Consent: Each subject reviewed the study protocol and signed an informed consent form.

References

- Dadfar M, Lester D, Abdel-Khalek AM, Ron P. Death Anxiety in Muslim Iranians: A Comparison Between Youths, Middle Adults, and Late Adults. *Illn Crisis Loss*. 2018;**29**(2):143-58. <https://doi.org/10.1177/1054137318790080>.
- Valikhani A, Sarafraz MR, Moghimi P. Examining the role of attachment styles and self-control in suicide ideation and death anxiety for patients receiving chemotherapy in Iran. *Psychooncology*. 2018;**27**(3):1057-60. [PubMed ID: 28608482]. <https://doi.org/10.1002/pon.4466>.
- Kim Y, Kim M. Factors Influencing Death Anxiety in Community-Dwelling Elderly: Based on the Ecology Theory. *Korean J Hosp Palliat Care*. 2019;**22**(1):30-8. <https://doi.org/10.14475/kjhpc.2019.22.1.30>.
- Azaiza F, Ron P, Shoham M, Tinsky-Roimi T. Death and dying anxiety among bereaved and nonbereaved elderly parents. *Death Stud*. 2011;**35**(7):610-24. [PubMed ID: 24501840]. <https://doi.org/10.1080/07481187.2011.553325>.
- Pourhaji F, Tehrani H, Talebi M, Peyman N. Perceived threat and stress responses in the face of Covid-19 based on health belief model. *J Health Lit*. 2022;**7**(1):17-25. <https://doi.org/10.22038/JHL.2021.59580.1174>.
- Dadfar M, Abdel-Khalek AM, Lester D, Atef Vahid MK. The Psychometric Parameters of the Farsi Form of the Arabic Scale of Death Anxiety. *Sci World J*. 2017;**2017**:7468217. [PubMed ID: 28698887]. [PubMed Central ID: PMC5494095]. <https://doi.org/10.1155/2017/7468217>.
- Schumaker JF, Warren WG, Groth-Marnat G. Death anxiety in Japan and Australia. *J Soc Psychol*. 1991;**131**(4):511-8. [PubMed ID: 1943076]. <https://doi.org/10.1080/00224545.1991.9713881>.
- Neimeyer RA, Wittkowski J, Moser RP. Psychological research on death attitudes: an overview and evaluation. *Death Stud*. 2004;**28**(4):309-40. [PubMed ID: 15129688]. <https://doi.org/10.1080/07481180490432324>.
- Chen HP, Huang BY, Yi TW, Deng YT, Liu J, Zhang J, et al. Attitudes of Chinese Oncology Physicians Toward Death with Dignity. *J Palliat Med*. 2016;**19**(8):874-8. [PubMed ID: 27022774]. [PubMed Central ID: PMC4982948]. <https://doi.org/10.1089/jpm.2015.0344>.
- Charmaz K. *The social reality of death: Death in contemporary America*. Addison Wesley; 1980.
- Soleimani MA, Lehto RH, Negarandeh R, Bahrami N, Nia HS. Relationships between Death Anxiety and Quality of Life in Iranian Patients with Cancer. *Asia Pac J Oncol Nurs*. 2016;**3**(2):183-91. [PubMed ID: 27981157]. [PubMed Central ID: PMC5123493]. <https://doi.org/10.4103/2347-5625.182935>.
- Lehto RH, Stein KF. Death anxiety: an analysis of an evolving concept. *Res Theory Nurs Pract*. 2009;**23**(1):23-41. [PubMed ID: 19418886]. <https://doi.org/10.1891/1541-6577.23.1.23>.
- Jong J, Ross R, Philip T, Chang S, Simons N, Halberstadt J. The religious correlates of death anxiety: a systematic review and meta-analysis. *Religion Brain Behav*. 2017;**8**(1):4-20. <https://doi.org/10.1080/2153599X.2016.1238844>.
- Lester D. The collett-lester fear of death scale: The original version and a revision. *Death Studies*. 1990;**14**(5):451-68. <https://doi.org/10.1080/07481189008252385>.
- Hoelter JW. Multidimensional treatment of fear of death. *J Consult Clin Psychol*. 1979;**47**(5):996-9. [PubMed ID: 512155]. <https://doi.org/10.1037//0022-006X.47.5.996>.
- Florian V, Kravetz S. Fear of personal death: Attribution, structure, and relation to religious belief. *J Pers Soc Psychol*. 1983;**44**(3):600-7. <https://doi.org/10.1037/0022-3514.44.3.600>.
- Neimeyer RA, Moore MK. Validity and reliability of the Multidimensional Fear of Death Scale. *Death anxiety handbook: Research, instrumentation, and application*. Taylor & Francis; 1994. 103-119 p.
- Burris CT, Bailey K. What Lies Beyond: Theory and Measurement of Afterdeath Beliefs. *Int J Psychol Relig*. 2009;**19**(3):173-86. <https://doi.org/10.1080/10508610902879982>.
- Naderi F, Esmaili E. Collet-Lester Fear of Death Scale Validation and Gender-Based Comparison of Death Anxiety, Suicide Ideation and Life Satisfaction in University Students. *J Appl Sci*. 2009;**9**(18):3308-16. <https://doi.org/10.3923/jas.2009.3308.3316>.
- Hoelter JW. 1979. Bowling Green State University; A multidimensional fear of death scale.
- Long DD. A Cross-Cultural Examination of Fears of Death among Saudi Arabians. *Omega J Death Dying*. 2016;**16**(1):43-50. <https://doi.org/10.2190/bxmk-5arg-d2x5-qat2>.
- Scarpello Hammett F. Death anxiety among health care professionals. *Collaboration with the 9th CNF Europe Region Conference*. The Royal College of Nursing, UK. 2012.
- Routledge C. Failure causes fear: the effect of self-esteem threat on death-anxiety. *J Soc Psychol*. 2012;**152**(6):665-9. [PubMed ID: 23057187]. <https://doi.org/10.1080/00224545.2012.691915>.
- Schmeichel BJ, Gailliot MT, Filardo EA, McGregor I, Gitter S, Baumeister RF. Terror management theory and self-esteem revisited: the roles of implicit and explicit self-esteem in mortality salience effects. *J Pers Soc Psychol*. 2009;**96**(5):1077-87. [PubMed ID: 19379037]. <https://doi.org/10.1037/a0015091>.
- Pyszczynski T, Greenberg J, Solomon S, Arndt J, Schimel J. Why do people need self-esteem? A theoretical and empirical review. *Psychol Bull*. 2004;**130**(3):435-68. [PubMed ID: 15122930]. <https://doi.org/10.1037/0033-2909.130.3.435>.

26. Gonen G, Kaymak SU, Cankurtaran ES, Karslioglu EH, Ozalp E, Soygur H. The factors contributing to death anxiety in cancer patients. *J Psychosoc Oncol*. 2012;**30**(3):347-58. [PubMed ID: 22571248]. <https://doi.org/10.1080/07347332.2012.664260>.
27. Sherman DW, Norman R, McSherry CB. A comparison of death anxiety and quality of life of patients with advanced cancer or AIDS and their family caregivers. *J Assoc Nurses AIDS Care*. 2010;**21**(2):99-112. [PubMed ID: 20006525]. <https://doi.org/10.1016/j.jana.2009.07.007>.
28. Öngider N, Özışık Eyüboğlu S. Investigation of death anxiety among depressive patients. *J Clin Psychiatry*. 2013;**16**(1):34-46.
29. Meyers LS, Gamst G, Guarino AJ. *Applied multivariate research: Design and interpretation*. Sage Publications; 2016.
30. Rosenberg M. Rosenberg Self-Esteem Scale (RSE). Acceptance and commitment therapy. *Measures Package*. 1965;**61**(52).
31. Bohllel N; Rajabi. The reliability and validity of Rosenberg self-esteem scale in freshman students of Shahid Chamran University of Ahvaz. *J Educ Psychol Res*. 2008;**8**(2):33-48.
32. Sharratt K, Boduszek D, Jones A, Gallagher B. Construct validity, dimensionality and factorial invariance of the Rosenberg Self-esteem Scale: a bifactor modelling approach among children of prisoners. *Curr Issues Pers Psychol*. 2014;**2**(4):228-36. <https://doi.org/10.5114/cipp.2014.47447>.
33. McKay MT, Boduszek D, Harvey SA. The Rosenberg Self-esteem Scale: a bifactor answer to a two-factor question? *J Pers Assess*. 2014;**96**(6):654-60. [PubMed ID: 24940657]. <https://doi.org/10.1080/00223891.2014.923436>.
34. Kielkiewicz K, Mathuna CO, McLaughlin C. Construct validity and dimensionality of the Rosenberg Self-esteem Scale and its Association with spiritual values within Irish population. *J Relig Health*. 2020;**59**(1):381-98. [PubMed ID: 31054063]. [PubMed Central ID: PMC6976542]. <https://doi.org/10.1007/s10943-019-00821-x>.
35. Stefan-Dabson K, Mohammadkhani P, Massah-Choulabi O. [Psychometrics Characteristic of Beck Depression Inventory-II in Patients with Magor Depressive Disorder]. *Arch Rehabil*. 2007;**8**(0):82-0. Persian.
36. Beck AT, Steer RA, Brown GK. *Manual for the Beck Depression Inventory-II*. San Antonio, USA: Psychological Corporation; 1996.
37. Kline RB. *Principles and practice of structural equation modeling*. Guilford Publications; 2015.
38. Hair JF, Black WC, Babin BJ, Anderson RE, Tatham RL. *Multivariate Data Analysis*. 7th ed. Prentice Hall: Upper Saddle River, USA; 2010.
39. Karairmak O. Establishing the psychometric qualities of the Connor-Davidson Resilience Scale (CD-RISC) using exploratory and confirmatory factor analysis in a trauma survivor sample. *Psychiatry Res*. 2010;**179**(3):350-6. [PubMed ID: 20493533]. <https://doi.org/10.1016/j.psychres.2009.09.012>.
40. Hintze J, Templer DI, Cappelletty GG, Frederick W. Death depression and death anxiety in HIV-infected males. *Death Studies*. 1993;**17**(4):333-41. <https://doi.org/10.1080/07481189308252629>.
41. Abdel-Khalek AM, Lester D. Death anxiety as related to somatic symptoms in two cultures. *Psychol Rep*. 2009;**105**(2):409-10. [PubMed ID: 19928602]. <https://doi.org/10.2466/PRO.105.2.409-410>.
42. Eshbaugh E, Henninger W. Potential Mediators of the Relationship Between Gender and Death Anxiety. *Individ Differ Res*. 2013;**11**(1):22-30.
43. Portal Moreno R, de la Fuente Solana EI, Aleixandre Rico M, Lozano Fernandez LM. Death anxiety in institutionalized and non-institutionalized elderly people in Spain. *Omega (Westport)*. 2008;**58**(1):61-76. [PubMed ID: 19112875]. <https://doi.org/10.2190/om.58.1.d>.
44. Neimeyer RA. Death Attitude Profile-Revised: A multidimensional measure of attitudes toward death. *Death anxiety handbook: Research, instrumentation, and application*. Taylor & Francis; 1994. 121 p.
45. Khaki S, Khesali Z, Farajzadeh M, Dalvand S, Moslemi B, Ghanei Gheshlagh R. [The relationship of depression and death anxiety to the quality of life among the elderly population]. *Hayat*. 2017;**23**(2):152-61. Persian.
46. Pyszczynski T, Greenberg J, Solomon S. A dual-process model of defense against conscious and unconscious death-related thoughts: an extension of terror management theory. *Psychol Rev*. 1999;**106**(4):835-45. [PubMed ID: 10560330]. <https://doi.org/10.1037/0033-295X.106.4.835>.
47. Strachan E, Schimel J, Arndt J, Williams T, Solomon S, Pyszczynski T, et al. Terror mismanagement: evidence that mortality salience exacerbates phobic and compulsive behaviors. *Pers Soc Psychol Bull*. 2007;**33**(8):1137-51. [PubMed ID: 17545415]. <https://doi.org/10.1177/0146167207303018>.
48. Zhang J, Peng J, Gao P, Huang H, Cao Y, Zheng L, et al. Relationship between meaning in life and death anxiety in the elderly: self-esteem as a mediator. *BMC Geriatr*. 2019;**19**(1):308. [PubMed ID: 3178561]. [PubMed Central ID: PMC6852934]. <https://doi.org/10.1186/s12877-019-1316-7>.
49. Davis SF, Bremer SA, Anderson BJ, Tramill JL. The interrelationships of ego strength, self-esteem, death anxiety, and gender in undergraduate college students. *J Gen Psychol*. 1983;**108**(1st Half):55-9. [PubMed ID: 6834017]. <https://doi.org/10.1080/00221309.1983.9711478>.
50. Rosenblatt A, Greenberg J, Solomon S, Pyszczynski T, Lyon D. Evidence for terror management theory: I. The effects of mortality salience on reactions to those who violate or uphold cultural values. *J Pers Soc Psychol*. 1989;**57**(4):681-90. [PubMed ID: 2795438]. <https://doi.org/10.1037//0022-3514.57.4.681>.
51. Chung MY, Cha K, Cho O. Correlation between Self-esteem, Death Anxiety, and Spiritual Wellbeing in Korean University Students. *Korean J Adult Nurs*. 2015;**27**(3):367. <https://doi.org/10.7475/kjan.2015.27.3.367>.
52. Fortner BV, Neimeyer RA. Death anxiety in older adults: a quantitative review. *Death Stud*. 1999;**23**(5):387-411. [PubMed ID: 10558505]. <https://doi.org/10.1080/074811899200920>.
53. Missler M, Stroebe M, Geurtsen L, Mastenbroek M, Chmoun S, van der Houwen K. Exploring death anxiety among elderly people: a literature review and empirical investigation. *Omega (Westport)*. 2011;**64**(4):357-79. [PubMed ID: 22530298]. <https://doi.org/10.2190/om.64.4.e>.
54. Waters LE, Moore KA. Predicting self-esteem during unemployment: The effect of gender, financial deprivation, alternate roles, and social support. *J Employ Couns*. 2002;**39**(4):171-89. <https://doi.org/10.1002/j.2161-1920.2002.tb00848.x>.
55. Tice DM. The social motivations of people with low self-esteem. In: Baumeister RF, editor. *Self-Esteem: The Puzzle of Low Self-Regard*. Boston, USA: Springer; 1993.
56. Soleimani MA, Zarabadi-Pour S, Pahlevan Sharif S, Motalebi SA. The Relationship Between Death Anxiety and Self-esteem in Patients With Acute Myocardial Infarction. *J Qazvin Univ Med Sci*. 2019;14-25. <https://doi.org/10.32598/jqums.23.14>.
57. Ghalebandi F. *Death in view of elders in Tehran*. Iran University of Medical Sciences; 1988.