The Development and Psychometric Properties of Geriatric Existential Anxiety Scale

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Abstract

Objective: The elderly is now struggling with various existential dimensions because they went through difficult life experiences. Due to the absence of any special tool to evaluate the dimensions of existential anxiety in the elderly, this study is aimed to develop a tool to study the dimensions of existential anxiety in the elderly and analyze its factors.

Method: This research is a descriptive study, and its statistical population consists of the elderly (men and women) who are 60 years old and above and living in Tehran. In this study, 350 elderly people (male and female) were selected from this population using the multi-stage cluster sampling method. The research tools included the Existence Anxiety Scale, Beck Anxiety Inventory, Beck Depression Inventory, Psychological Flexibility Questionnaire, and Anxiety about Aging scale. The methods of exploratory factor analysis and confirmatory factor analysis, criterion validity, and convergent validity and divergent validity were used to evaluate the validity of the scale. And its reliability was assessed by two methods of internal consistency (Cronbach's alpha) and stability of results (retest) with an interval of two weeks.

Results: The exploratory factor analysis with the principal component analysis method and Varimax rotation has led to the extraction of 4 factors. The indicators of confirmatory factor analysis confirmed the existence of the four factors. It has indicated the acceptable correlations between the scale of Anxiety about Aging and its components with other valid parallel tools of criterion validity, convergent validity, and divergent validity of the scale. The reliability coefficients were obtained by the Cronbach's alpha method and the retest reliability gained at a satisfactory level.

Conclusion: The Anxiety about Aging scale is a valid and reliable self-assessment tool to evaluate the level of existential anxiety and its dimensions in the elderly, and it can be used for future activities and researches.

Keywords*: Psychometric properties, Existential Anxiety, Elderly, Depression*

Introduction

The elderly may experience more emotional difficulties than any other age group because of their age. The factors, including losses [1], feelings of loneliness [2], feelings of sadness and depilation due to the inattention of children and others [3], feelings of guilt and self-blame, despair, anxiety, and feelings of futility [4] are the most serious feelings that threaten the elderly. Therefore, the elderly may experience most of the different dimensions of existential anxiety [5-7]. It's been years that anxiety, as the root of all mental illnesses, has been considered by counselors, psychologists, and psychiatrists, and many studies have been conducted on this issue [8,9]. Although Rollo May, like Freud, believed that anxiety was a sign of internal conflict, he considered its nature and origin as

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something else. Existential Anxiety is a threat to values, and no one can get away from it because values are always vulnerable. The conflict of being or not being is getting closer and closer to the level of consciousness in the old age by seeing the death of loved ones [10].

By growing old and the advent of the signs of approaching death, such as white hair and wrinkled face and seeing the death of loved ones, the deep dimensions of anxiety such as death anxiety, loneliness, responsibility and freedom, and life meaning will reappear and challenge the human being at the final stage of life [11]. Existential anxiety recurs during the old age [12]. For example, Man's Search for Meaning in old age is also very important. During the time that old people encounter with death, pain, and loss, their existential worries and general anxiety will be increased. Also, the study of Scott and Wims has shown that increasing the dimensions of existential anxiety can predict depression, anxiety, and suicidal ideation [13]. The study of the dimensions of existential anxiety in the elderly has restricted the researchers because of the abstractness of its concepts and components and the lack of appropriate tools to assess the dimensions of existential anxiety. The Existing questionnaires are mostly one-dimensional. For example, Templer Death Anxiety Scale [14], the Existential loneliness questionnaire [15], the meaning in life questionnaire [16], and the Emptiness and existential concern scale [17] each focus only on one dimension of existential anxiety. Also, Yalom mentions that death, freedom, loneliness, and meaninglessness are identified as the four ultimate concerns of psychopathology in the existential approach. And he argues that the person's encountering with each of these four dimensions of existential anxiety is the content of internal existential conflict. The only available questionnaire based on Yalom's theory of existential therapy is the Existential Anxiety Questionnaire (QFEA). But it seems that this questionnaire did not address the existential challenges of the elderly in particular, and also due to the length of this scale that makes the elderly to be exhausted, answering it will be difficult for them. The present study aims to develop a scale for existential anxiety of the elderly and investigate the quality of the psychometry of this scale in the Iranian elderly population.

Methods

The present study is a descriptive study that is included in the category of psychometric tools. The statistical population of the present study includes all the elderly (men and women) aged 60 years old and above living in Tehran. The research environment included the public centers of the cultural centers of the municipality, city parks, and out-patient medical centers of the University of Social Welfare Sciences. According to the research design, sampling was conducted from the research community during three stages. By using the convenient sampling, 35 eligible elderly people were selected at the first stage, and they have completed the scale to evaluate the meaningfulness of the items of the scale and the preliminary studies. Therefore, the possible administrative and formal problems along with the initial statistical and psychometrics characteristics will be eliminated. In the second stage, the multi-stage sampling method was used to evaluate the validity, especially the factor validity of the scale. Thus, the obtained sample can be the representative of the community as much as possible and, in terms of number, be appropriate to conventional operations for factor analysis. According to the method, first, the city of Tehran was divided into five parts (north, east, center, south, west). Then, a municipal district was randomly selected from each of the five sections. And finally, a center and a park were chosen as the research environments from each area. Then, the considered sample group has extracted 350 elderlies by the convenient sampling method and in equal proportions from the relevant areas. In the third stage, 60 people were selected by the simple random sampling method to evaluate the reliability of the scale by the test-retest method, and the HFS scale was performed on them at a time interval of 2 weeks after the primary implementation.

Research Tools

Existential Anxiety Questionnaire (QFEA):

This questionnaire was made by Masoudi (18). It has 29 items, and the content validity of the instrument was conducted by the ICC method based on the opinion of 10 experts (0.95). The convergent validity of this tool is in the range of 0.28-0.55, its concurrent validity is in the range of 0.35-0.82, and its divergent validity is -0.25. The validity of the tool is obtained 0.83 and

0.86 by Cronbach's alpha and the test-retest method, respectively. The results of the exploratory factor analysis indicate that the questionnaire consists of 4 factors, and the results of confirmatory factor analysis also indicate the goodness of fit of the factors. Accordingly, the factors were named according to theoretical texts in four dimensions of death, freedom, loneliness, and meaning [18].

Beck Anxiety Inventory:

This inventory consists of 21 items (four-point Likert). The range of scores is between 0-63. The questionnaire mostly emphasizes on the physiological aspects of anxiety. In this inventory, three items are related to anxious mood, three items are related to fear, and other factors measure the syndrome of the motor (Kaviani and Mousavi, 2008). Beck and Clark (1988) reported the internal consistency of 0.93 and the retest reliability of 0.75 for this scale. In Iran, the internal stability of this scale was reported 0.92 by Cronbach's alpha method, and its test-retest reliability was 0.83, and its validity (intra-class correlation) was 0.83 [19].

Beck Depression Inventory - Second Edition:

This inventory was introduced by Beck et al. in 1961, and it was revised in 1971. The questionnaire has 21 items that are scored from zero (health sign) to 3 (acute and profound depressive symptoms). The correlation of its revised form and the original form was reported 0.89 (E.T. Beck, Steer, and Garbin, 1988). Fatti, Birshak, Atef, and Dobson (2005) reported Cronbach's alpha of 0.91, test-retest coefficient (with one-week interval) of 0.81, and 0.61 for the correlation with the Beck Anxiety Inventory [20].

Acceptance and Action Questionnaire (Psychological Flexibility):

This questionnaire was developed by Bond et al. in 2007. A 10-item version of the original questionnaire was developed by Hayes (2000). This inventory measures the structures that refer to diversity, acceptance, experiential avoidance, and psychological flexibility. The high scores indicate greater psychological flexibility. The psychometric characteristics of this questionnaire indicate the appropriateness of reliability and validity of this questionnaire in Iran. The factor analysis has identified two factors for this questionnaire by using the Varimax rotation method (avoiding emotional experiences and control over life). The correlation of the Acceptance and Action Questionnaire with Beck Depression Inventory (-0.59), Beck Anxiety Inventory (-0.44), GHQ-28 (0.62), and difficulty in regulating emotion (-0.59) indicate the proper validity of this questionnaire. Also, the reliability of the questionnaire was evaluated to be appropriate by using Cronbach's alpha coefficient (0.89) and the halving coefficient method (0.83).

Findings

The determination of the content validity in this study was based on the judgment of experts. The judgment was made based on the opinions of 15 experts who were related to the content under review. The two coefficients of Content Validity Ratio (CVR) and Content Validity Index (CVI) were used to confirm the content validity. The values of Content Validity Ratio (CVR) were obtained in the range of 0.60 to 0.99. According to the number of the panel of experts, which included 15 people, a value higher than 0.49 was considered as an acceptable quality limit. Accordingly, the values of the Content Validity Ratio (CVR) for all the items of the tool are higher than the ones presented in the Lawshe table. A criterion higher than 0.79 has been used to confirm the Content Validity Ratio, and the values obtained from this index also confirmed the content validity of the scale items. Therefore, they were all reserved for the next step. In addition to the content validity and face validity methods, the methods of concurrent validity, convergent validity, divergent validity, and factor validity were used to validate the scale in the elderly.

Table 1. The demographic characteristics of the research sample in the factor validity section (n = 324)

Characteristic	Variable classes	Frequency	Relative frequency percentage	Cumulative frequency percentage
Age	60-64	136	41.9	41.9
	65-69	86	26.5	68.5
	70-74	51	15.7	84.2
	75-79	38	11.7	95.9
	80-84	13	4	100
Gender	Male	132	40.7	40.7
	Female	192	59.2	100
Level of Education	Illiterate	33	10.2	10.2
	Elementary - guidance	140	43.2	53.4
	Secondary - graduated	72	22.2	75.6
	Associate- Bachelor	57	17.6	93.2
	Master and above	22	6.8	100
Marital Status	Single	98	30.2	27.6
	Married	84	69.8	100
Number of Family Members	1 or 2 people	87	26.8	26.8
	3 to 5 people	196	60.5	87.3
	6 and above	41	12.6	100

The Results of Exploratory Factor Analysis

The factor analysis method based on the rotation of principal components was used to evaluate and confirm the factor structure of the Existential Anxiety Scale in the elderly. The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy was 0.81. Also, the results of the Bartlett's test for Sphericity showed a sufficiently significant correlation between the items on the scale ($P < 0.001$, $df = 153$ and $x = 2145.468$); this indicated the adequacy of the sample size and the justifiability of factor analysis. The number of factors extracted from the scale and the amount of variance extracted in the factor analysis can be seen in Table 2. Since this is the first time the scale understudy has been implemented, the minimum load factor was defined as 0.30. The examination of the eigenvalues, which are greater than one, indicates that four factors can be extracted. It can explain about 53.92% of the total variance. The first, second, third, and fourth factors explain 15.05, 14.32, 12.89, and 11.65% of the total variance, respectively (Table 2). The examination of the Scree plot diagram supports this argument (Fig. 1).

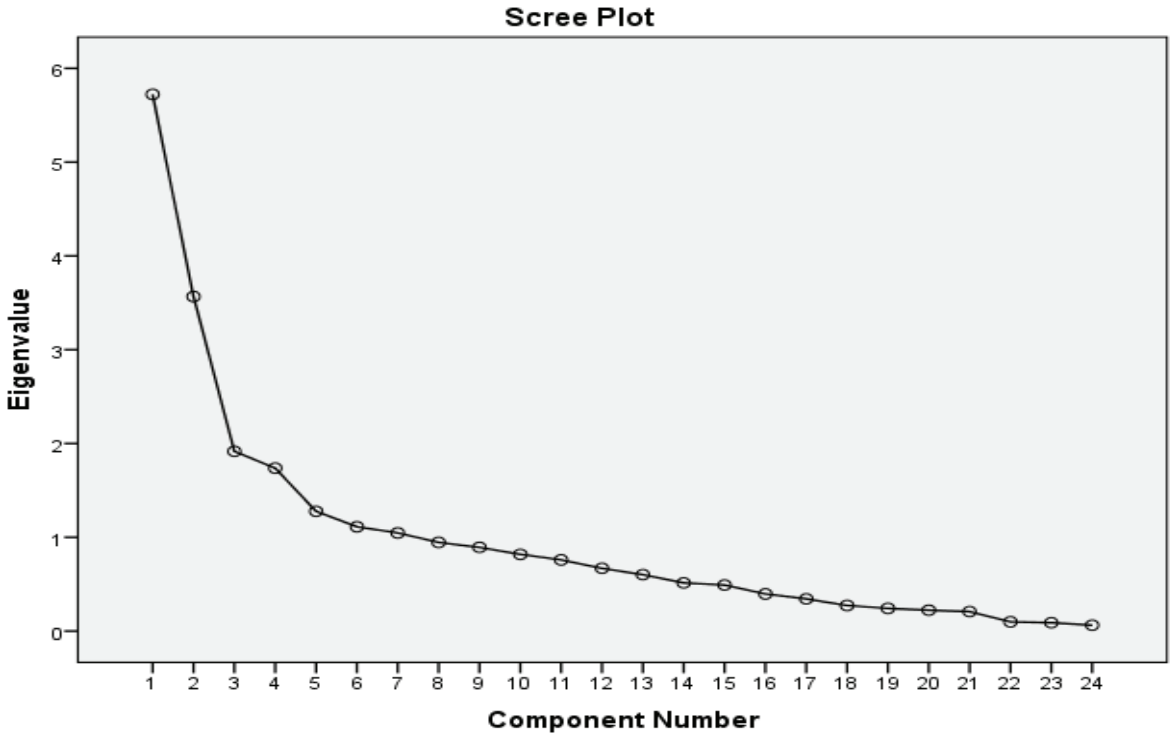

Figure 1. Scree plot resulting from the factor analysis

Table 2. Rotated factor loadings of principal component analysis for 18 scale items

Item number	Factor one	Factor two	Factor three	Factor four
1	0.68			
2	0.67			
3	-0.66			
4		0.80		
5		0.76		
6		0.73		
7		0.64		
8			0.79	
9			0.75	
10			0.74	
11			0.63	
12				0.69
13				0.69
14				0.64
15				0.52

As can be seen in Table 2, the items that were subjected to a factor had a load factor of greater than 0.30. It should be noted that researchers considered the coefficients above 0.30 and sometimes above 0.40 to be important and meaningful in the definition of factors. They also considered coefficients less than these limits as random ones to study the nature of the relationship between variables and achieve the definitions and naming of the factors. According to the factor structure of the primary (main) scale, the four factors of the anxiety of meaning, freedom and responsibility, loneliness, and death were clearly distinguished from each other.

The Results of Confirmatory Factor Analysis

The confirmatory factor analysis was performed by using the Amos Graph software. For this purpose, a model based on the previous information about the data structure was created, and the data related to the model were entered into the analysis environment based on the raw data method, which was previously created by SPSS software. The findings from the implementation of confirmatory factor analysis to evaluate the studied factors are shown in Table 2. The characteristics calculated in Table 3 are evaluated through 8 evaluation criteria as follows. Chi-square indices (x^2), Chi-square-to-freedom ratio index (x^2 / df), Adjusted Goodness of Fit Index (AGFI), Comparative Fit Index (CFI), Normed Fit Index of Bentler and Bonnet (NFI), Root Mean Square Error of Approximation (RMSEA), and Root Mean Square Residual (RMR)

Table 3. The goodness of Fit Index of confirmatory factor analysis model of HFS scale

Model	x2	Df	P	x2/df	GFI	AGFI	CFI	NFI	RMSEA	RMR
Three-Factor	127.38	84	0/0.002	1.51	0.80	0.72	0.80	0.91	0.079	0.042

The value of chi-square for the four-factor model with the degree of freedom of 127.38 is equal to 0.84, which is statistically significant. Based on the data presented in the table above, the x2 / df, CFI, NFI, and RMR indicators represent a Normed fit index, and GFI, AGFI, and RMSEA indicators represent a relatively Normed fit index.

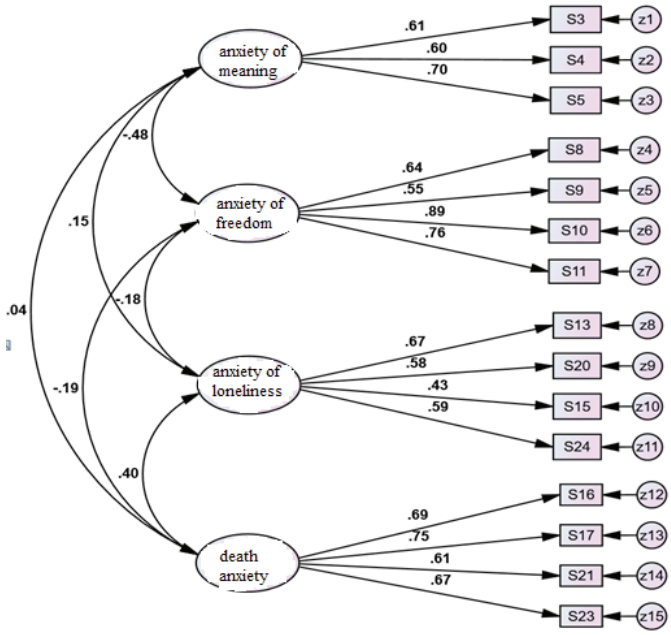

Figure 2. The load factor of the 3-factor model of 18 items scale in the path of the first model

The Results of the Criterion Validity and Convergent and Divergent Validity

The correlation of the scale scores was calculated with four other valid tools to obtain more evidence to validate the Existential Anxiety Scale. For this purpose, in this part of the research, a sample group of 110 elderly people was extracted from the main sample group, and they have completed all four parallel scales along with the main scale. The sample under study included the age group of 60 to 83 years old with a mean age of 68.12 and a standard deviation of 5.62 years. It has included 55 men and 55 women. In terms of marital status, there were 33 single people and 77 married people. The Existence Anxiety Scale was used to estimate the criterion-dependent validity; the Acceptance and Action Scale (psychological flexibility) was used to estimate the divergent validity. And the Beck Depression and Anxiety Inventories were used to estimate the convergent validity.

The Results of the Validity

Table 4. The correlation coefficients between the existential anxiety scale and Reality anxiety

Variables		Total Existential Anxiety	Meaning	Freedom	Loneliness	Death
Reality anxiety	Correlation	0.65*	0.27*	0.58*	0.42*	0.51*
	Significance	0.000	0.003	0.000	0.000	0.001
Beck Depression inventory	Correlation	0.29*	0.33*	0.19*	0.21*	0.16*
	Significance	0.01	0.009	0.02	0.01	0.04
Beck Anxiety inventory	Correlation	0.53*	0.36*	0.28*	0.41*	0.28*
	Significance	0.000	0.000	0.002	0.000	0.000
Flexibility	Correlation	-0.458*	-0.213*	-0.383*	-0.299*	-0.121*
	Significance	0.000	0.022	0.002	0.000	

P<0.001*

As can be seen in Table 4, the correlation between the scores of the Existential Anxiety Scale and the Reality Anxiety Scale (r = 0.65) is significant at the level of P <0.001.

The obtained correlation coefficient for the correlation between Beck anxiety inventory and total existential anxiety (r = 0.53) is significant and positive at the level of P <0.001. Also, the correlation between the Beck depression inventory and existential anxiety scale (r = 0.29) is significant and positive at the level of P <0.01.

The results of the Pearson correlation indicated that there is a significant negative correlation between the subjects' scores on the existential anxiety scale and its subscales with the psychological flexibility scale (r = -0.45). These results confirm the divergent validity of the existential anxiety scale in the elderly.

Reliability by the Test-Retest Method

The scale of the correlation coefficients between the scores of 65 elderlies (29 males and 36 females) was calculated in two rounds with an interval of 2 weeks to measure the reliability by using the test-retest method.

Table 5. The reliability coefficient of the Existential Anxiety Scale and each of its subscales in the elderly by the test-retest method (n = 65)

Subscale	Meaning	Freedom	Loneliness	Death	Total score
Correlation of two rounds of evaluation	0.85	0.80	0.78	0.69	0.73
Level of significance	0.001	0.001	0.001	0.001	0.001

The test-retest reliability coefficient for the total score was r = 0.73, which was significant at the level of P <0.001. These coefficients indicate the retest reliability (temporal reliability) appropriate to the existential anxiety scale in the elderly.

Discussion

The results of this study briefly indicated that A) the face validity and content validity of the Existential Anxiety Scale in the Iranian elderly are confirmed. B). the calculated reliability coefficient by the internal consistency method in the original sample by using the test-retest method showed the appropriate reliability of the scale in a sample of the original sample group for its 15 items. C) The exploratory factor analysis by the principal component analysis and the Varimax rotation has led to the extraction of 4 factors. D) The confirmatory factor analysis confirmed the existence of the four factors of the scale. E) The calculated correlation coefficient between the scale of existential anxiety of the elderly and the other parallel tools showed criterion validity and sufficient convergent and divergent validity for the elderly.

It is needed to conduct further studies and researches in the future to develop and complete the existing information obtained from the past and present researches. Therefore, they could eventually lead to the widespread use of assessment tools such as the Existential Anxiety Scale of Aging in clinical and research settings.

- The use of this scale to predict the existential anxiety of individuals should be conducted with caution because the validity of the scale prediction was not considered in the present study. Thus, it is recommended to study the predictive validity.

- It is also recommended to use other data collection methods to evaluate the existential anxiety of the elderly such as interviews to reduce the bias of the responses.

Acknowledgments: We are so thankful to the dear elders who participated in this study, the precious professors of Tehran University of Social Welfare and Rehabilitation Sciences, whose devotional cooperation made it possible to conduct this research.

Source of Funding: Funding for this research was provided by Iranian Research Center on Aging**.**

Conflict of Interest: There is no Conflict of Interest in this research.

Ethical Clearance: Accordingly, an Ethical code of 990153 was obtained from the Ethical Committee of University of Social welfare and Rehabilitation.

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