



# Designing a Measurement Scale for Spiritual Health of the Elderly in Tehran/Iran (2019)

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## Abstract

**Background:** Spiritual health is one of the important dimensions of health that causes the coherence and harmony of other dimensions of health in human beings. Due to the increasing number of elderly, considering the status of their health is important.

**Objectives:** The present study was an attempt to design and evaluate a measurement instrument for spiritual health in the Iranian elderly, which is appropriate for the Iranian society.

**Methods:** This mixed methods study used a sequential exploratory strategy. In the first phase, spiritual health items were extracted based on a review of the previous studies and interviews with experts and the elderly using direct content analysis. In the second phase, the standardized questionnaire was assessed by performing validity and reliability tests on 400 elderly residents of Tehran. The participants were selected based on the purposive sampling method from the elderly referring to nursing homes. To analyze the collected data, qualitative content analysis was employed. In the first phase, 45 items of the questionnaire were extracted based on the interviews. After quantitatively determining the face and content validity, six items were removed, and the questionnaire items were reduced to 39 items.

**Results:** Exploratory factor analysis on this questionnaire identified five factors that explained a total of 52.2% of the total variance of the test. The Cronbach's alpha coefficient obtained confirmed the high internal consistency of the questionnaire (0.925). Also, a high correlation was reported between the test and retest with a 10-day interval ( $r = 0.997$ ). In addition, a high and significant correlation was reported in the simultaneous implementation of the designed instrument with Paloutzin and Ellison's spiritual health instrument ( $r = 0.76$ ).

**Conclusions:** In general, based on the present study's findings, the designed questionnaire has an acceptable level of validity and reliability and is usable for the elderly.

**Keywords:** Spiritual Health, Measurement Scale, Psychometrics, Iranian Elderly

## 1. Background

Aging is a global phenomenon that will be one of the most important social and welfare challenges in developing countries in the near future. Currently, the elderly (those aged 60 years and older) have the highest population growth rate in the world compared to the other age groups. The world's elderly population until 2050 is expected to be triple the population of 2000 and reach two billion elderly (1). According to the definition of the World Health Organization, an elderly is someone who has passed the age of 60 and is divided into three groups in terms of age: Young elderly (70 - 60 years), middle-aged elderly (80 - 71 years), and old elderly (81 years and above) (2).

Aging is usually associated with various social, psychological, and physiological problems.

In Iran, the aging process has begun according to statistical and demographic instruments and indicators. The increase in the elderly population is one of the most important economic, social, and health challenges in the 21st century (2, 3). Based on the results announced in the last census in 2016, the population of the elderly (60 years and older) in the country is more than seven million and 400 thousand people and includes 9.2% of the total population (4). According to the United Nations' declaration, the phenomenon of aging in Iran is accelerating (5). Aging is a natural process, in which physiological and psychological changes occur in the body (3). Changes that occur in old

age lead to a significant reduction in the ability of the elderly (6). On the other hand, the reduction of social relations, the loss of relatives, and physical and mental illnesses create many problems for the elderly in adopting a healthy lifestyle (7).

Spiritual health is a core dimension of health (8). Spiritual health includes a purposeful life, transcendence, and actualization of different dimensions and capacities of human beings. Spiritual health creates a balance between physical, psychological, and social aspects of human life (2).

## 2. Objectives

Regarding the increasing population of the elderly in Iran, ambiguity in understanding spiritual health and its characteristics among the elderly according to the cultural values and beliefs, lack of an appropriate measurement scale, and the important effects of spiritual health on the elderly's decisions about health, disease, and quality of life (6), the present study was conducted to design an instrument to assess the spiritual health of Iranian elderly.

## 3. Methods

This mixed methods study used a sequential exploratory strategy (9) and was conducted in 2019 in Tehran, Iran. Before the study, approval was received from the Humanities Research Ethics Committee of Shahid Beheshti University of Medical Sciences (Code. IR.SBMU.RETECH.REC.1397,303). The informed consent of the participants was obtained before data collection. They were also assured of anonymity and confidentiality of the data.

### 3.1. Extraction of Items

In the first stage, a qualitative study was conducted based on direct content analysis to achieve the concept of spiritual health in the elderly. In order to achieve an accurate understanding of the spiritual health of the Iranian elderly, scientific databases were searched, and interview sessions were conducted with 64 faculty members of universities and research centers in the country who were expert in the spiritual health of the elderly and had a publication in this field. Then, the views and opinions of the target community regarding spiritual health were extracted using semi-structured interviews. Some interview questions were as follows: "In your opinion, what is spiritual health?" and "who is spiritually healthy?". The participants were selected based on purposive sampling. They were all Iranian Muslims over 60 years old with the Persian language. Data

were saturated by interviews with 25 elderly aged 60 - 81 years. Each interview lasted around 20 minutes to an hour. The interviews were recorded with the permission of the participants by the audio recorder. If the participants did not consent to be recorded, the researcher wrote down the main keywords of the conversation immediately after the interview, and the text was transformed. In this stage, the primary instrument was designed, and by employing the qualitative content analysis, the main themes of the interviews were extracted and coded. In coding, similar themes were combined, and duplicates were removed. The codes were then categorized and reviewed to identify the main categories and subcategories. Next, they were converted into appropriate and measurable expressions. A questionnaire was created, using the results of the qualitative research and inductions from the expert panel. Trustworthiness criteria (Guba and Lincoln) were used to achieve the accuracy and reliability of the data. To obtain this criterion, the researcher allocated enough time to conduct interviews and triangulation of different groups, constantly reviewed and compared the data and classes for similarities and differences, re-checked findings with participants, and provided detailed data analysis and in-depth, rich research descriptions for readers. The coding process was done using Excel software. Quantitative data analysis and exploratory factor analysis (EFA) were done by SPSS software version 22.

### 3.2. Sampling

The number of participants is different for factor analysis and determining the validity of the constructs. To obtain valid factors, the samples should be both representative and large enough. MacCallum et al. provided a range for determining the sample size: A sample size of 100 participants is weak, a sample size of 200 is not bad, a sample size of 300 is good, and a sample size of 500 is very good (10). Therefore, a sample size of 400 was considered in the present study. The cluster sampling method was used for selecting the participants. In the first stage, of the northern, southern, eastern, western, and central areas of Tehran, two areas were randomly selected. Then, two public places (park and bus/metro station) were selected from each area, and, finally, 200 elderly were randomly selected from each public place to complete the questionnaires. If any of the elderly did not complete the questionnaire or quit in the middle of the study, another elderly was replaced. The inclusion criteria for the study included being 60 years old and older, being able to speak Persian, and willingness to participate. The questionnaires were mainly self-completed. If any of the participants asked the researcher did not have his/her glasses, the questionnaire items were read to them, and their answers were written.

The participants had 10 - 20 minutes to complete the questionnaires.

### 3.3. Validity

In order to evaluate the content validity of qualitative data, the initial draft of the instrument was examined by 15 experts in statistics, epidemiology, religious sciences, aging, and health to find the difficulty, the degree of inconsistency, ambiguity of expressions, or inadequacy in the meaning of words. Also, the relative content validity ratio (CVR) and content validity index (CVI) were used to evaluate the content validity of quantitative data. Calculating the CVI helps the researcher to ensure the selection of the best and most important content statistically (9). In this stage, 15 experts were asked to determine whether an item is essential to operationalize the theoretical construct. The numerical value of the CVR was determined using the Lawshe table. Calculating the CVI indicates whether the item is best designed to measure the construct (11). Therefore, in the present study, the panel of experts was asked to examine each item in a four-point spectrum (unrelated, needs serious review, relevant but needs review, and fully relevant). The CVI score of above 0.79 for each item was confirmed in terms of content validity. Finally, the face validity of the instrument was evaluated by the experts and also distributed among 15 elderly at the beginning and before conducting the main study. In order to evaluate the face validity qualitatively, the terms and expressions were examined in terms of non-repetition, comprehensibility, shortness, etc., from the perspective of the target community (the elderly). To determine the face validity quantitatively, the items were compiled and provided to the target group as a table with a five-point Likert scale ranging from 'completely important' (five points) to 'not important at all' (one point) and the impact of the item was calculated. In the item impact method, if the impact score of each expression is equal to or greater than 1.5, the expression is recognized and retained as appropriate for subsequent analysis (11). Factor analysis was used to evaluate the construct validity. In the current study, EFA was used to investigate the internal relationship between the variables and to discover the classes of variables that are most related to each other. The principal component analysis method and the Varimax orthogonal rotation method were used for exploratory analysis with a factor loading of more than 0.3 and based on Kaiser Meyer and Olkin (KMO) value and Bartlett's test of Sphericity. Moreover, in order to check the criterion validity, concurrent criterion validity was used. For this purpose, the designed instrument for the spiritual health of the elderly and the criterion instrument were completed simultaneously by the elderly. Paloutzin and El-

lison's Spiritual Health Questionnaire was selected as the criterion instrument.

### 3.4. Reliability

Internal consistency was used by calculating Cronbach's alpha to examine internal reliability, and for external validity, test-retest was used. In this stage, the questionnaires were distributed among the 20 elderly participants.

## 4. Results

The result of qualitative data based on direct content analysis led to the production of three main categories, including spiritual insight, spiritual function, and spiritual affection. Primarily, 45 items were generated based on the codes describing these categories. During the content validity evaluation and internal consistency, some items were omitted, and finally, 39 items remained.

### 4.1. Item Reduction

In the first stage, using qualitative content analysis of the interviews, combining similar items, and removing the repeated items, 45 items were extracted. To determine the face validity of the questionnaire, 20 items were revised based on experts' comments. For examining the CVR based on the Lawshe table, the items with a CVR value lower than 0.49 were removed. Therefore, in this stage, the items, including "one needs to be jealous in order to make progress in his/her work" and "honesty is a priority for me" were eliminated. Furthermore, in examining the CVR, the items with a value lower than 0.79 were removed. Accordingly, the items "I exercise", "I am an early bird", and "I study in my spare time" were eliminated. Therefore, after determining the content validity using qualitative and quantitative methods, five items were removed. Finally, the instrument evaluated by the experts was administered to 15 elderly, and the items and their wording were examined in terms of clarity and understandability for the target population, and one item was reworded accordingly. However, no item was removed after a quantitative examination of the face validity of the questionnaire, and the item impact coefficient was 1.5 for all items.

In the next stage, the finalized questionnaire was distributed to 400 elderly aged 60 - 90 years, with a mean age of 67.96 years and a standard deviation of 7.104. Also, 57.3% of the participants were male, and 42.7 were female. Most of the participants were married (57.5%) and retired (31.6%), did not have a diploma (39.7), and had 3 - 4 children (48%) (Table 1).

**Table 1.** Socio-demographic Characteristics of the Respondents (n = 400)

Characteristics	Frequency (%)
<b>Gender</b>	
Male	229 (57.2)
Female	171 (42.8)
<b>Age (y)</b>	
60 - 69	275 (69.7)
70 - 79	83 (20.8)
80 - 90	42 (10.5)
<b>Marital status</b>	
Single	17 (4.3)
Married	230 (57.5)
Divorced	42 (10.5)
Deceased wife/husband	111 (27.8)
<b>Educational level</b>	
Illiterate	110 (27.6)
Under diploma	158 (39.7)
Diploma	75 (18.8)
Academic degree	55 (13.9)
<b>Occupation</b>	
Employed	96 (24.4)
Retired	124 (31.6)
Home keeper	91 (23.2)
Unemployed/not able to work	82 (20.9)
<b>Number of children</b>	
No children	22 (5.8)
1 - 2 children	52 (13.6)
3 - 5 children	183 (48)
More than 5 children	124 (32.5)

#### 4.2. Factor Analysis

EFA was carried out on 40 items using the main factors. Kaiser-Meyer-Olkin value was found to be 0.887. In addition, Bartlett's test was found to be meaningful at 0.0001 with a value of 6250.97. Therefore, factor analysis was used based on the correlation matrix (Table 2).

**Table 2.** KMO and Bartlett's Test of Sphericity<sup>a</sup>

Variables	Values
KMO value	0.895
Bartlett's test	5823.733
P-value	000.0

<sup>a</sup> Significant level < 0.05.

For determining the number of factors using the criterion value, the results showed that 52.2% of the variance in the spiritual health of the elderly could be explained with the first six factors with a value of 1.48, and 47.8% of the variance was explained by the remaining 34 factors. After determining the number of factors, Varimax rotation was used to simplify the extraction of the factors. The accepted factor loading for each item was considered to be 0.3 after extracting the factors. The number of items for each factor should be determined because each factor should have at least three items to be considered as a separate factor. Therefore, any factor with less than three items should be omitted. Therefore, the sixth factor with only one item (item 40) was removed (Table 3).

The first factor, "manifestation of religious orders"/ "worships and attention to resurrection," included 11 items and explained 13.075% of the variance in the spiritual health of the elderly. The second factor, "value of old age/the value of old age and relationship with others," included 14 items and explained 12.506% of the variance in the spiritual health of the elderly. The third factor ("peace/peace and deep confidence") had seven items explaining 11.859% of the variance in the participants' spiritual health. The fourth factor, "relationship with the creator/true happiness," accounted for 6.854% of the variance in their spiritual health and had four items. Finally, the fifth factor, "achievement," included three items, and 4.221% of the variance in the spiritual health of the elderly was explained by this factor.

#### 4.3. Reliability

Internal consistency was analyzed to examine the reliability of the instrument used for measuring the spiritual health of the elderly. Cronbach's alpha was also calculated for the whole 39-item questionnaire and the questionnaire factors. Cronbach's alpha coefficient for the whole questionnaire and for the factors 1 - 4 were reported to be higher than 0.7. For the fifth factor; however, the reliability coefficient was 0.45 (Table 4). Because factor five included three items, the correlation between the items was used to evaluate internal consistency, and it was found to be 0.44, which is within the acceptable range, according to Cox and Ferguson (12).

In the next stage, an analysis of the reliability of the research instrument using the test-retest method and based on the coefficient of Pearson correlation between the two implementations of the test with an interval of ten days showed that the total test-retest reliability was 0.997. Besides, the correlation of the five factors of the questionnaire the two times running the test was higher than 0.9. Because the p-value was lower than 0.01, there was a meaningful agreement between the two times of administering

Table 3. Factor Matrix

Items	Factors					
	1	2	3	4	5	6
1. I consider God as the creator of life with no partner.				0.727		
2. Worshipping God leads to true happiness and perfection.				0.700		
3. I am valuable because I am a human.				0.690		
4. Reliance on God gives me peace.				0.643		
5. I believe everything ends with death.	0.693					
6. Death is entering a new phase of life.	0.737					
7. Whatever we plant in this world, we harvest in the other.	0.712					
8. I believe old age is the period of maturity and sophistication.		0.437				
9. I believe long life is a blessing from God.		0.577				
10. I believe oldness is a part of life.		0.621				
11. I plan for the life ahead.		0.633				
12. I have a good relationship with the people around and my family.		0.516				
13. I try not to annoy anyone with my words and actions.		0.610				
14. I believe if we are good to others, they will be good to us, and if we are bad to others, they will be bad to us.		0.502				
15. I would like to share my experience with others.		0.668				
16. Others' progress is enjoyable for me.		0.671				
17. I believe charity causes God's satisfaction.	0.379					
18. It is difficult to be beneficent in old age.					0.332	
19. Honest people are most successful.					0.698	
20. Sometimes it is necessary to pretend religiosity to advance work.					0.599	
21. I do not interfere in others' affairs.		0.376				
22. I prefer to go on a pilgrimage.	0.497					
23. I believe there is no irresolvable problem.		0.398				
24. I am hopeful for the future.		0.648				
25. There is significant meaning in my life.		0.506				
26. One should be patient in his/her life.			0.643			
27. I have confidence in God and believe I will not be desperate in the future.			0.659			
28. Making a will causes peace.			0.679			
29. I am always thankful to God.			0.740			
30. God accepts his servants' repentance.			0.673			
31. I do not regret my life and am satisfied with it.	0.398					
32. God's remembrance makes one not feel lonely.			0.642			
33. I pay Sharia funds (Khums and Zakat, paying the debts, etc.)	0.668					
34. To understand the effects of prayers, one should pray with concentration and pure intention.			0.530			
35. I enjoy worshipping God.	0.523					
36. I fast if my physician does not prohibit me from fasting.	0.592					
37. I prefer to say congregation prayers.	0.591					
38. Trust and kindness lead to others' abuse.	0.371					
39. I do not feel old and disabled.		0.415				

**Table 4.** Reliability Test Result (N = 400)

Factors	Number of Items (Standardized Item Alpha)	Cronbach's Alpha
Manifestation of religious orders	11	0.873
Value of aging	14	0.843
Peace	7	0.839
True happiness	4	0.773
Achievement	3	0.45
<b>Total</b>	<b>39</b>	<b>0.925</b>

the test, which confirms the repeatability of its different dimensions and the whole research instrument (Table 5).

#### 4.4. Validity

To examine the criterion validity of the questionnaire, simultaneous criterion validity was used. The developed instrument and the spiritual health questionnaire were simultaneously completed by the elderly. The Pearson correlation coefficient between the two tests was 0.760 ( $P \leq 0.01$ ), which showed a significant correlation between them. In the present study, face validity and content validity were determined based on the comments of experts with high experience and knowledge in the field of spiritual health, old age, and developing research instruments. Furthermore, the Lawshe table and Waltz and Basel CVI were used to determine the content validity of the questionnaire. The face validity of the questionnaire was evaluated based on experts' comments and piloting on 20 elderly. Five items were eliminated based on the comments of 15 experts in the stage of determining the face and content validity. To examine understandability of the questionnaire items to the participants, the questionnaire was administered to 15 elderly, and one item was edited accordingly.

## 5. Discussion

Spiritual health is one of the fundamental concepts of life and is considered an important strategy for promoting general health and quality of life (5). René showed that without spiritual health, one could not have a good and optimal performance biologically, mentally, and socially (13). Physical well-being and quality of life can be improved by spiritual health (14). Also, studying patients with asymptomatic heart failure in 2009 indicated that spiritual health was positively related to better mental health (15).

Various studies have been conducted to assess the status of spiritual health in the elderly in Iran. Kashani Movahhed et al. showed that among 34 published studies

on measuring the spiritual health of the elderly (living in a home or nursing homes), 91.2% used Paloutzin and Ellison's questionnaire to assess the spiritual health of the respondents, 5.9% used the Jarel Spiritual Well-Being Scale (JSWB), and in one study (2.9%), a researcher-made questionnaire was used (16).

Based on the different views on the definition of spiritual health, different instruments have been developed and introduced to measure this dimension of health. One of the most commonly used instruments is the 20-item questionnaire developed by Paloutzin and Ellison. Another instrument is the spirituality index of wellbeing (SIWB), developed by Delman and Free, to measure spiritual health (4). The scores ranged from 12 to 60, with higher scores indicating higher spiritual health. It had two subscales, including "self-efficiency" and "life plan." Jarel's spiritual health measurement scale developed by Hungelmann et al. includes 21 items and three dimensions, including (1) belief/faith, (2) life/responsibility about oneself, and (3) satisfaction with life/self-actualization (17). The daily spiritual experience scale (DSES) is another scale assessing spiritual health developed by Underwood and Teresi (18). The spiritual health and life-orientation measure (SHALOM) developed by Fisher (19), is a questionnaire to measure spiritual health. In this questionnaire, four dimensions of spiritual health are assessed, including personal, public, environmental, and transcendent (21).

In the present study, after preparing the first version of the instrument, the psychometrical qualities of the instrument were tested by examining face validity and quantitative and qualitative content. The Cronbach's alpha coefficient showed that the questionnaire had high reliability, which indicated the accuracy of the instrument and its dimensions in measuring the construct of interest.

Besides, the construct validity of the instrument was also examined using EFA, and 39 items were evaluated as good. In the factor analysis, the minimum factor loading of 0.3 was considered for keeping each item in the extracted factors. Abedi et al. (3), Holm et al. (20) and Perski et al. (21) also used factor analysis to examine the construct validity

**Table 5.** Pearson Correlation Coefficients for the Test-Retest Reliability Analysis

Factors	Number of Items	Cronbach's Alpha <sup>a</sup>
Manifestation of religious orders	11	0.995
Value of aging	14	0.997
Peace	7	0.981
True happiness	4	0.956
Achievement	3	0.987
Total	39	0.997

<sup>a</sup> P ≤ 0.01.

of their designed instruments.

The results of the present study showed that the spiritual health of the elderly had five factors, including manifestation of religious orders with 11 items, the value of old age with 14 items, peace with seven items, true happiness with four items, and achievement with three items.

In order to compare the content of the developed questionnaire with that of other spiritual health questionnaires, we can refer to Paloutzin and Ellison's questionnaire. This questionnaire has been widely used in Iranian studies for different age groups, including the elderly (16). This scale was developed in 1982 and included 20 items and measures spiritual health in the framework of two concepts of existential health and spiritual health (12). The content of the items of this questionnaire is mainly focused on an individual's attitude to the relationship with God and the meaning of life and does not cover other fields, such as individuals' relationship with others and the environment and the worship, and it is not special to the elderly. The questionnaire used in the present study is based on the teachings of the religion of Islam, considering the related texts and sources and specialists' comments and the comments of religious experts in Islamic teachings. Therefore, the present questionnaire examined the status of spiritual health in the elderly based on all dimensions of spirituality. According to the results of the present study, it can be claimed that the developed questionnaire is particularly based on the local culture of the elderly because all of its items were extracted from the results of qualitative content analysis. Accordingly, it can present a true picture of the status of spiritual health in the elderly. Overall, based on the findings of the present study, the developed questionnaire revealed an acceptable level of reliability and validity to be used for the elderly.

### 5.1. Strengths and Weaknesses

This scale was developed based on the attitude of the elderly toward spiritual health, which is one of the particular features of this scale. It is easy to use this scale due to

its simplicity and understandability; it can be particularly used for illiterate subjects, as well. The age of individuals and their epistemology make differences, which should be considered in future studies and their evaluation.

### Footnotes

**Authors' Contribution:** Study concept and design: B. KM. and F. HS.; data extraction: B. KM.; analysis and interpretation of data: B. KM. and M. K.; drafting of the manuscript: B. KM. and R.R.; critical revision of the manuscript for important intellectual content: B. KM., R.R., and M. K.; statistical analysis: B. KM.; editing and proofreading: M. A.

**Conflict of Interests:** The authors declared that there is no conflict of interest in this study.

**Data Reproducibility:** The data presented in this study are openly available in one of the repositories or will be available on request from the corresponding author by this journal representative at any time during submission or after publication. Otherwise, all consequences of possible withdrawal or future retraction will be with the corresponding author.

**Ethical Approval:** Ethical approval was received from the Humanities Research Ethics Committee of Shahid Beheshti University of Medical Sciences (Code. IR.SBMU.RETECH.REC.1397,303).

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**Informed Consent:** The informed consent of the participants was obtained before data collection.

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