

Psychometric Properties of the “Lasher and Faulkender Anxiety about Aging Scale” among Iranian older people

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Abstract

Background

Assessing anxiety in the elderly and the factors affecting this phenomenon will help the health care providers to provide appropriate and effective support and health care services for older adults. The aim of the present study was to assess the psychometric properties of the Aging Scale (AAS) among Persian speaking older adults.

Method:

A sample of 703 community-dwelling older adults was recruited for the study. A 'forward-backward' translation procedure was conducted to develop the Iranian version of the AAS. Confirmatory factor analysis (CFA) and Rasch model were then used for construct validity, and GHQ-12 and MSPSS were utilized for assessing concurrent validity of the AAS.

Result

The study participants included 416 (59.2%) men and 287 (40.8%) women with an average age of 69.4 years (SD 8.11). Cronbach's alpha for Fear of Old People, Psychological Concerns, Physical Appearance, Fear of Losses and the overall score was 0.881, 0.705, 0.748, 0.768 and 0.77, respectively. Applying CFA, it was found that the four original factors model was the best solution with 0.55 of the total variance. The result of the CFA indicated that this four-factor model had a good fit to the data. The results were then confirmed by Rasch analysis. Moreover, the AAS was significantly correlated with MSPSS ($r = -0.395$, $p < 0.001$) and GHQ_12 ($r = 0.238$, $p < 0.001$).

Conclusion

The Persian version of the AAS was found to be valid and reliable for measuring anxiety of ageing among Persian speaking elderly populations.

Background

With the growing years, the senile section of society is exposed to multiple stressors encompassing; decease of dear ones, dysfunctional mobility, financial dependence, dependence for survival, numerous and chronic illnesses conditions [1–3] Additionally, the perceived lack of ability, fear of gradual degradation of the physical self, and the feeling of loneliness induce fear and anxiety. The negative perception of aging leads to enhanced levels of anxiety, which is termed as anxiety of aging [4, 5].

The anxiety of aging refers to worrying about the capacity to maintain sound health [6, 7] expressed that aging anxiety has fundamental dimensions such as psychological, social, physical, and transpersonal or spirituality. As a result, understanding how the anxiety of aging can influence behavior and interaction would be a critical research question.

Several factors can influence the anxiety of aging. The anxiety of aging denotes anxiety about growing old, probably influenced by culture, gender, age, and socioeconomic status [8]. Studies have demonstrated that individuals have varied perceptions of levels of aging anxiety, such as low negative anxiety and very high levels [9]. Individuals suffering from anxiety of aging have little tendency to socialize with other older adults [9]. Some studies have shown that the anxiety of aging is more reflective in middle age and younger people rather than older adults [10]. Results might be accurate in general. However, physical, mental, and social alterations would make older people more dependent, consequently leading to higher levels of anxiety of aging among older adults.

Related psychological issues of older adults might lead to numerous psychopathologies such as depression, cognitive impairment and/or death [11], lower life satisfaction and marital satisfaction [12].

Since anxiety is a critical issue, it is necessary to focus on designing relevant interventions to reduce anxiety to foster the quality of life. Therefore, valid and reliable tools are required to investigate the anxiety of aging and potential factors escalating it, especially among the aging population. Most of the scales evaluating anxiety of aging are uni-dimensional, and the item factor loadings are generally small [13, 14]. However, concrete diagnoses of the anxiety of aging require several components to be considered, and the scale must be multi-dimensional. The uni-dimensional scales suffer from the limitations of [7]. It seems, one of the common multi-dimensional scales that is used to assess anxiety of aging is Lasher's Anxiety about Aging Scale [AAS] was developed by Lasher and Faulkender in 1993 [7].

Since Lasher's AAS or similar tools have not been psychometrically adapted for people who are Persian or talk in Farsi language; Therefore psychometric evaluation of this tools can be classified as five reasons for conducting: 1) psychometric an appropriate tool for assessing the anxiety of the older adults 2) Designing interventions to reduce the anxiety of aging after evaluating the anxiety about aging in the diagnostic evaluation phase 3) Investigating Factors affecting on aging anxiety of older adults 4) Investigating the effect of the gender and age pattern of aging anxiety across the life among the older adults, and finally, 5) Assessing the concurrent validity of AAS.

Methods

Participants and procedures

In this cross-sectional design, a sample of 703 community-dwelling older adults was recruited by using a multistate randomized sampling method in the cities of Bukan and Qazvin, Iran, between February and May of 2018. The general population covered by the regional health care centers in urban areas formed the sampling frame. In the first stage, out of fifteen urban regions/clusters, six regions/clusters were selected by using proportionate random sampling. Then, the sample size in each cluster was calculated using the quota distribution for the older adults who had registered in health care centers. The inclusion criteria were being at least 60 years old, lack of cognitive disorders, and having a health record or profile in the relevant health centers. Additionally, eligibility criteria included being mentally and cognitively able

to be interviewed and complete questionnaires. Eligibility screening was administered on the day of enrollment.

The study was approved by the Tabriz University of Medical Sciences Ethics Committee [Ethics Code: IR.TBZMED.REC.1397.304) and the written informed consent form was obtained from all the participants before the study.

Translation procedure

The translation procedure was conducted based on international guidelines to confirm the accuracy of the translation. Several steps were taken as (1) forward translation: two independent bilingual native Iranians performed the translation of Lasher Anxiety of Aging scale from English into Persian with the background of gerontology and geriatrics. (2) Synthesis of the Translations: Both translated versions were compared by the research team to unify the translations. (3) Backward translation: Two back translations into English was performed by two independent bilingual translators, who have not seen the original English questionnaire. These steps were conducted to identify inconsistencies or conceptual errors in the translation procedure. (4) Expert Committee: All the translators, the study project manager, two health education specialists, and two geriatricians determined the cross-cultural face validity of the Lasher Anxiety of Aging scale. At this stage, some modifications were made to adjust its cultural adaptability and fix any mismatch between the original and translated versions. (5) The Iranian version of the Lasher Anxiety of Aging scale was pilot tested on ten older adults to understand how the older adults interpret the items on the questionnaire. The older adults were asked to give their comments about the clarity and understandability of the scale's wordings. (6) Field test: all necessary changes were incorporated based upon the pilot phase recommendations, and the revised version was administered on 703 older adults in Bukan and Qazvin cities.

Measures

The Lasher and Faulkender Anxiety about Aging Scale (AAS)

AAS has four subscales determine overall aspects of the anxiety of aging. The AAS consists of a 20-item measure that produces a summative score based on the answers to all 20 items, including 1. Fear of old people ("I feel very comfortable when I'm around an old person") 2. Psychological concerns ("I fear it will be very hard for me to find contentment in old age") 3. Physical appearance ("When I look in the mirror, it bothers me to see how my looks have changed with age") and 4. Fear of losses ("I fear that when I am old all my friends will be gone)." Lasher anxiety of aging has high internal consistency, and the four factors explain 50.6 percent of the total variance. Lasher's anxiety of aging scale measures on a 5-point Likert- scale, and items are scored from 1 (Strongly disagree) to 5 (Strongly agree). The higher score indicates a higher level of aging anxiety[7].

General health questionnaire (GHQ_12]

The Persian version of GHQ-12 [15] is used to measure mental health. The response was captured on a Likert scale where the scores between 0 to 3 indicating "less than usual" to higher scores reflecting "much more than usual" with a score range of 0 to 36. The higher score indicates lower psychological well-being. The reliability coefficient reported for GHQ-12 was 0.82, which indicates an acceptable internal consistency.

The Multidimensional Scale of Perceived Social Support [MSPSS]

For measuring perceived social support, we used the Persian version of the MSPSS[16], which had been developed by[17]. It included twelve items in three domains- family, friends, and significant others. The response rate was a seven-point Likert-type scale, ranging from 0 to 6—a higher score indicating greater perceived social support. In our study, an estimated reliability coefficient internal consistency of 0.94 was reported.

Statistical analysis

The reliability of the Lasher Anxiety of aging scale was evaluated using internal consistency and item-to-total correlation [corrected for overlap]. Cronbach's α values of ≥ 0.7 and item-to-total correlation of < 0.4 are considered acceptable.

The construct validity of the AAS was assessed by performing confirmatory factor analysis (CFA) and the Rasch model. Diagonally weighted least squares (DWLS) estimator was used as an appropriate estimator for the ordinal data (i.e. Likert-type scale) in the CFA. Further, to assess the model fit, the following fit indexes were considered: comparative fit index (CFI) and Tucker–Lewis index (TLI); root mean square error of approximation (RMSEA) and standardized root mean square residual (SRMR) and chi-square (χ^2) test. The acceptable model fit was defined as CFI and TLI > 0.9 , RMSEA and SRMR < 0.08 and a nonsignificant chi-square.

Average Variance Extracted (AVE) and Composite Reliability (CR) were computed using the factor loadings extracted from the CFA. Values > 0.5 and > 0.7 for AVE and CR indicate the evidence of the convergent validity of the AAS.

To further assessment of the AAS, Rasch analyses were performed using the partial credit model (18–21). Item fit in the Rasch model was evaluated using information-weighted fit statistic (infit) mean square (MnSq), and outlier-sensitive fit statistic (outfit) MnSq. The values between 0.5 and 1.5 were considered as an acceptable fit. Additionally, person and item separation indices and reliability were computed for each subscale of the AAS. Permissible values for Person and item separation reliability were > 0.7 , while that for the person and item separation indices were > 2 . To evaluate measurement invariance across different subsample of older adults with gender and living status, in each item of the AAS, the differential item functioning (DIF) was carried out. A DIF contrast < 0.5 logits indicates a small absence of DIF.

In other to assess the concurrent validity of the AAS, Pearson correlations were computed between the AAS, the GHQ-12 and MSPSS.

All statistical analyses were performed using R's Lavaan package, Winstep software 4.1.0 and SPSS version 24.0 (IBM Corp).

Result

In total, 703 older adults have participated in this study. The participant's characteristics are shown in Table 1. The mean age of older adults was 69.4 ± 8.1 years. The majority of the participants were male (59.2%), illiterate (79.7%), married (66.6%) and housekeeper by occupation (40.0%).

Table 1
Participants characteristics (N = 703)

	Mean \pm SD or n (%)
Age (Year)	69.41 \pm 8.11
Gender (Male)	416 (59.2%)
Educational status	
Illiterate	560 (79.7%)
Primary and secondary schools	143 (20.3%)
Living status	
With wife/husband	468 (66.6%)
With children	114 (16.2%)
Alone	121 (17.2%)
Currently smoker (Yes)	118 (16.8%)
Alcohol drinking (Yes)	12 (1.7%)
Occupational status	
retired	138 (19.6%)
employed	105 (24.6%)
Unemployed	39 (15.8%)
housekeeper	238 (40.0%)

The results of CFA showed that the four-factor structure model fits well with the data ($\chi^2 = 593.844$, $df = 164$, $p < .001$; CFI = 0.933; TLI = 0.907; RMSEA = 0.076 (90% CI 0.069–0.084), $p < .000$), SRMR = 0.070). All factor loadings were significant and ranged from 0.54 to 0.85 (item 16) to 0.85 (item 2).

The corrected item-total correlations exceeded the recommended threshold of 0.40 value, ranging from 0.40–0.80 (Table 2).

Table 2
Psychometric properties of the Anxiety About Aging Scale in item level

Item #	Analyses from classical test theory				Analyses from Rasch		
	Factor loading ^a	Item-total correlation	Infit MnSq	Outfit MnSq	Difficulty	DIF contrast across gender ^{cd}	DIF contrast across living status ^{ce}
1.	0.66	0.73	1.39	1.01	0.31	-0.13	-0.18
3.	0.66	0.68	1.29	1.22	0.40	-0.10	0.19
10.	0.81	0.80	0.69	0.70	0.13	-0.26	0.31
13.	0.80	0.72	0.97	1.11	-0.59	0.22	-0.05
19.	0.77	0.68	1.0	0.85	-0.25	0.12	-0.37
5.	0.83	0.40	1.21	1.03	0.19	-0.49	-0.45
7.	0.64	0.43	1.11	1.19	-1.59	0.08	0.22
11.	0.59	0.55	0.81	0.53	0.60	0.10	-0.30
16.	0.54	0.41	1.39	1.24	0.39	0.40	-0.04
18.	0.67	0.59	0.72	0.59	0.42	-0.07	-0.18
4.	0.83	0.50	1.39	1.11	1.01	-0.25	-0.28
9.	0.61	0.47	1.36	1.24	-0.35	-0.25	0.39
12.	0.80	0.69	0.72	0.61	0.02	0.27	0.0
15.	0.84	0.68	0.75	0.66	-0.05	0.25	-0.28
20.	0.55	0.46	1.26	1.34	-0.64	-0.06	0.0
2.	0.85	0.70	0.76	0.76	0.26	-0.08	-0.06
6.	0.81	0.71	0.85	0.52	0.65	-0.16	0.13
8.	0.62	0.43	1.24	1.38	-0.95	-0.05	0.30
14.	0.85	0.69	0.78	0.68	0.12	0.14	-0.13
17.	0.82	0.70	0.64	0.67	-0.09	0.09	-0.37
^a Based on confirmatory factor analysis.							
^b Using Pearson correlation.							
^c DIF contrast > 0.5 indicates substantial DIF.							

Item #	Analyses from classical test theory	Analyses from Rasch
	^d DIF contrast across gender = Difficulty for Females-Difficulty for males.	
	^e DIF contrast across living status = Difficulty for participants who were living Alone-Difficulty for participants who were living with family	
	MnSq = mean square error; DIF = differential item functioning.	

Item-fit statistics are shown in Table 2. The Infit and Outfit MNSQ lied within the acceptable range of 0.5–1.5. For the older adults, the most challenging item was 'I get nervous when I think about someone else making decisions for me when I am old', whereas the most comfortable item was 'I will have plenty to occupy my time when I am old'. Additionally, all items were invariant across gender and living status groups.

The subscale level analysis of the items yielded item separation indices ranged between 3.41 and 10.42, having reliability range between 0.87 and 0.99, and person separation indices ranged between 2.30 and 2.86 with person reliability ranged 0.73 and 0.81 (Table 3).

Table 3
Psychometric properties of the Anxiety About Aging Scale at the scale level

Psychometric testing	Fear of Old People	Psychological Concerns	Physical Appearance	Fear of Losses
Composite Reliability	0.90	0.79	0.85	0.89
Average Variance Extracted	0.55	0.43	0.54	0.63
Internal consistency (Cronbach's α)	0.881	0.705	0.748	0.768
Person separation index	2.30	2.81	2.86	2.79
Item separation index	3.41	10.42	5.13	8.52
Person separation reliability	0.73	0.81	0.79	0.79
Item separation reliability	0.87	0.99	0.96	0.99

As Table 3 shows, all values of Cronbach's alpha, CR, and AVE were above the acceptable thresholds in four subscales.

The AAS was significantly correlated with MSPSS ($r=-0.395$, $p < 0.001$) and GHQ_12 ($r = 0.238$, $p < 0.001$).

Discussion

In the present study, the psychometric properties of the Persian version of the AAS were examined using classical test theory (CTT), item response theory (IRT) approaches. CTT is based on the fact that a person's score is a set of true scores and error scores. However, CTT does not provide a clear picture of the relationship between items and attribute questions with the subject's ability to be measured by these questions. In this CTT, for all abilities (subjects with different abilities), a constant value of measurement standard error is obtained, so that the reliability index remains constant for all ability levels. Of course, the accuracy of measuring each test varies at different levels of ability. This problem is not evident in the case of CTT. Unlike CTT, in IRT, the index of accuracy of parameter estimation is called information function, and its error rate is equal to the standard error of parameter estimation. The results of the CTT indicated that the Persian version of the AAS was internally consistent and had an acceptable four-factor structure using CFA, and acceptable AVE and CR across older adults. In addition to this, the Rasch model further confirmed that the Persian version of the AAS had a four-factor structure and was invariant across gender and living status groups.

Previous studies also supported the four-factor structure of the AAS [7, 22–24]. However, our study was the first study to apply it particularly on the elderly adults.

A fundamental principle in examining the measurement invariance is to compare the individuals from diverse subgroups to detect bias at the item or scale level. The results of the study revealed that the AAS items were invariant across gender and living status among subgroups of the participants. Consistent with previous studies [24, 25], the AAS can be conveniently applied for gender groups as well as the living conditions of the elderly in Iran.

Conclusion

In general, the AAS has robust psychometric properties to measure levels of anxiety among the elderly population of Iran. The validity and reliability of the questionnaire and the factor structure of the items have been approved. Therefore, the results of the present study can be applied in diverse circumstances, including mental health research of the elderly with high performance.

Abbreviations

Anxiety About Aging Scale (aas)

Full term	Abbreviation
Anxiety about aging scale	AAS
General health questionnaire-12 items	GHQ-12
The Multidimensional Scale of Perceived Social Support	MSPSS
Diagonally weighted least squares	DWLS
Comparative fit index	CFI
Tucker–Lewis index	TLI
Confirmatory Factor Analysis	CFA
Composite Reliability	CR
Root Mean Square Error of Examination	RMSEA
Standardized root mean square residual	SRMR
Average Variance Extracted	AVE
Differential item functioning	DIF
information-weighted fit statistic	infit
Mean square	MnSq
Outlier-sensitive fit statistic	outfit

Declarations

Declarations

Ethics approval and consent to participate

Ethical approval for the study was provided by the Ethics Committee of the Tabriz University of Medical Sciences [Ethics Code: IR.TBZMED.REC.1397.304]. The written informed consent form was obtained from all the participants before the study.

Consent for publication

Not applicable.

Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing interest

The authors claim no conflict of interests with other people or organizations

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Author contributions

AP, SN, HA designed the study. KS collected survey data. SN, MAJ, HA analyzed and presented the statistical results. AP, SN, MAJ, HA were major contributors in writing the manuscript. HA, AP and VC edited the manuscript. All authors read and approved the final manuscript.

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