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Psychometric Properties of the Persian Version of the Quality of Life in Early Old Age (CASP- 19)

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Abstract

Background: Today, improving the quality of life for the elderly is of great importance. In addition, creating a favorable environment for the elderly has become a common concern worldwide.
Objectives: The aim of this study was to assess the psychometric properties of the Persian version of quality of life (CASP-19) in older people.
Methods: The study included 200 participants. The CASP-19 quality of life instrument for older people was adapted to Persian language through a translation and translation-back procedure. Afterwards, the reliability (internal consistency and test-retest) and validity (including face validity, content validity, factor analysis, known groups, and criterion validity), through assessing the correlation between the Persian version of the CASP-19 and the SF-36, were measured.
Results: Based on internal consistency (Cronbach > s α), the reliability for CASP-19 was 0.97 and for the four subscales varied from 0.93 to 0.97. Test-retest reliability (Pearson's correlation coefficient) for the Farsi version of the CASP-19 ranged from 0.87 to 0.94. Evaluation of discriminant validity indicated the discriminant power of the CASP-19 in terms of the presence or absence of curtailment of personal autonomy. Criterion validity indicated a significant correlation between many dimensions of the CASP-19 and the SF-36.
Conclusions: This study confirmed the validity of the CASP-19 in terms of construct, convergent, known groups, and face validity. Besides, it showed an acceptable internal consistency. The CASP-19 is valid for investigating the needs of the Iranian elderly.

Keywords: CASP-19, Persian Version, Quality of Life, Reliability, Translation, Validity

1. Background

Because of improved living conditions, increased lifetime, and increased life expectancy, the communities are faced with large populations of the elderly. The increase in aging population is among the most important economic, social, and health challenges in the twenty-first century that are faced by health services providers as well as family and community members (1). It is predicted that by 2050 the population of the elderly in developing countries will have reached 80% (2). Iranian population is also going through this challenge. Based on the statistical data from population and housing census in 2011, about 2.8% of the population in the country and 1.6% of the population in Tehran are aged 60 years and above (3).

According to the world health organization, quality of life represents an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, concerns, and personal interests (4). As Fassino states at the present time the quality of life is one of the main indicators for assessing the quality of care services; as quality of life covers various domains such as physiological aspects and an individual's performance, it is of utmost importance to pay special attention to this subject. To properly evaluate quality of life, it is necessary to consider all the mentioned dimensions (5). Given the special needs in old age, quality of life can easily be threatened during this period of life (6).

Measuring quality of life is associated with different challenges (7). In addition, every measuring tool must be suitable for the population under the study (7). Measuring the quality of life of the elderly is a complex and multifaceted phenomenon (8). Inventorys must be sensitive to

various physical, mental, and social aspects of quality of life. In many studies, generic tools developed for assessing the general quality of life have been used to measure quality of life of the elderly (9, 10). In a number of studies, researchers have used special tools to evaluate the quality of life that have specifically been designed for this purpose (11-13).

The CASP-19 inventory (2003), comprises four domains ('control', 'autonomy', 'pleasure' and 'self-realization') and is based on needs satisfaction model, was developed in the UK (14) and then was utilized in European countries (7, 15). This tool has been translated into 12 languages and numerous studies have been carried out to standardize it and assess its psychometric features in different countries and cultures, including in Brazil (16), Taiwan (17), Ireland (18), and Ethiopia (19). In a study (2007), this inventory was used to evaluate aged men and women living in 10 European countries, including Sweden, Austria, Germany, Netherlands, Spain, Italy, France, Denmark, Greece, and Switzerland (19). Based on the results of the majority of previous studies, this inventory is a valid and reliable tool for evaluating the quality of life of the elderly people in different cultures (19). Despite the great efforts made by the researchers, we did not find the Persian version of the inventory. Given the value of this inventory for the evaluation of the quality of life of the elderly, this study aimed to determine the validity and reliability of the Persian version of CASP-19 that is designed to specifically assess the quality of life of the elderly.

2. Objectives

Given the importance of quality of life questionnaires, this study aimed to evaluate the psychometric properties of the older people's quality of life questionnaire (CASP-19).

3. Materials and Methods

3.1. The Persian Version of Quality of Life (CASP- 19)

This study is a methodological study. The aim of the study was to assess the methodology of designing and evaluation the tools, scales, and data collection techniques. This research is aimed to translate and evaluate the psychometric properties of CASP-19 inventory.

This inventory (2003) was designed through the three stages of advisory panels, focus groups, and pilot study (to determine the structure and duration of completion). The inventory included 19 items consisted of four domains of control (four items), autonomy (five items), Self-realisation (five items) and pleasure (five items). The inventory has a four-point Likert type scale ranging from "often" to "never". The lowest score for each term was "zero" and the highest score was "three". It is worth noting that six items of the inventory (including items 1, 2, 4, 6, 8, and 9) were scored in a reverse form. The highest and lowest obtainable score, respectively, were 57 (full satisfaction with all the four dimensions) and zero (complete lack of quality of life). Cronbach's alpha was between 0.60 and 0.80

Firstly the questionnaire was translated into Persian and then evaluated by 200 male and female older adults that were all members of the same community during the course of the research. They were all living at Jahandidegan centers in Tehran. After correspondence with the author of the GAI Questionnaire and with his permission and instructions, the recommended process of a Forward-Backward translation was used to translate the text from English to the target language Persian. The first step was to translation of items into Persian by two experts who were fluent in both English and Persian. Two Persian translations of the questionnaire and their recorded equivalents were examined and revised by the research executives, research assistants and translators. After examination of the translations and a discussion of the differences, they tried to remove the differences; and finally a single Persian version of the CASP-19 was developed with consideration of all options to determine proper equivalents for words and expressions. Two fluent speakers of both English and Persian (different from the two primary translators), who had been completely unaware of the CASP-19 and its research and stages translated the Persian version of the CASP-19 developed in the previous stage back into English. The resulting two English translations were then examined by the research executives and a single version of the CASP was then developed in English and compared with the original English version of the CASP-19. Finally, an expert in Persian language and literature made the necessary revisions, and the final Persian version of the CASP-19 was confirmed.

A qualitative method was used to for content validity. In this stage, an expert panel consisting of five experts presented their suggestions on making the Persian version of the questionnaire more compatible with the Iranian target population.

3.2. Sample and Setting

The sample included 200 elderly men and women in a Tehran community dwelling. There were more than 60 thousand members in home health centers across all the 22 districts of Tehran municipality. During the research they were members of Jahandidegan Institute in Tehran citizens club. Tehran was divided into four regions; North, South, East and West.

Two centers were randomly selected from each region of Jahandidegan institutes in Tehran citizens club. Random sampling was performed in each center.

The inclusion criteria were used as follows: being 60 years old or more; living in different regions of Tehran;

speaking Persian; being affected with diagnosed mental illness and cognitive disorder (the 6th Persian version or above of short-mental state examination; Iranian version of the abbreviated mental test score) (20); having a hearing or speech impairment, and willingness to participate in the study.

Researchers had different opinions about the required sample size for conducting a factor analysis to determine construct validity. The suggested sample size for factor analysis was 5 - 10 subjects per item. Some experts even believed that three subjects per item provided adequate explanation of variance and factor loading was above 0.8. In this study, a sample of older people was used and the number of participants was five times greater than that of the items of the CASP-19 (21).

3.3. Ethical Considerations

The study proposal was approved by the research council of Shahed University. The questionnaire was translated with the written permission of Hyde, the original developer of the scale. Permission of the nursing home managers was granted in order to take ethical issues into consideration. In addition, before the beginning the study, participants were informed about the goals and importance of the research, and their informed consent was obtained. Moreover, participants were assured that their information would only be used for the purpose of the study, and that their personal information would remain confidential both during the course of the study and after it. It was also explained to them that they were allowed to leave the study at any stage if they wished.

3.4. Data Collection

After obtaining consent, a total of 200 people were enrolled in the study. Data were collected from January to June in 2015. Interviews with the elderly, at their home were conducted by designed questionnaire and completed by the researcher.

Data were collected from participants using the Persian version of the quality of life questionnaire (CASP-19), the Persian version of SF36 (22), the scale of curtailment of personal autonomy (23) and a demographic questionnaire.

The Short Questionnaire Form 36 (SF36) is a general quality of life instrument that measures eight health related concepts: physical functioning (PF-10 items), role limitations due to physical problems (RP-4 items), bodily pain (BP-2 items), general health perceptions (GH-5 items), vitality (VT-4 items), social functioning (SF-2 items), role limitations due to emotional problems (RE-3 items), and perceived mental health (MH-5 items). Each scale was given a score in the range of zero to 100. Zero was the worst and 100 indicated the best situation on the scale. Reliability and validity of the Persian version and the questionnaire were confirmed (22).

The Scale to determine Violation of individual rights of the elderly included 10 items that were a part of the questionnaire related to abuse in the family of the elderly people. The options were “yes”, “no” and “Not case” indicating a situation in which the phrase fits or did not fit the living conditions of elderly person. Scores were given in the range of 0 - 100, where a higher score indicated a higher level of the symptoms of curtailment of personal autonomy. Psychometric properties of the tools were examined and validity and reliability of Iranian family benefit were sought (23). The questionnaire asked for demographic information including age, sex, marital status, residence, level of education, economic status, job status, a history of smoking, a history of illness, and frequency of hospitalization during the past year.

To determine the discriminant validity of the questionnaire used in this study, known groups were compared. It was assumed that the Persian version of CASP -19 could distinguish the absence or presence of a curtailment of personal autonomy, and the elderly persons who had experienced curtailment of his or her personal autonomy, quality of life and scored low on the scale.

To assess the criterion validity, correlation of Persian version of the CASP-19 was tested and scores of the SF-36 were measured. Reliability was evaluated through measuring consistency. To determine internal consistency, Cronbach’s alpha coefficient was calculated for the whole questionnaire and for each dimension. To investigate stability, the test-retest method was used. Thus, 40 questionnaires were completed in two stages, at a two-week interval. The scores obtained by the two-stage test indicator intra-class correlation coefficient (ICC) were compared.

3.5. Statistical Analysis

An exploratory factor analysis was conducted using the KMO index (Kaiser-Mayer-Olkin) and Bartlett’s sphericity test (BT), principal components analysis, and the varimax rotation. In this study, an inflection point of 0.3 was taken as the minimum factor loading needed to keep each item in the factors extracted from the factor analysis. Internal consistency for each domain and for the overall scale was assessed using Cronbach’s alpha, and an index of at least 0.70 was required to achieve acceptable internal consistency (24).

The known group comparison was measured using T-test and one-way analysis of variance (ANOVA).

3.6. Characteristics of the Sample

From among the 200 participants, 101 (50.5%) were female. In addition, 148 (74%) were married, and most had

only primary level education (39.5%). Of all the 145 participants (72.5%) were in the 60 - 70 year old age group; in addition 47.5% were pensioners, and 54.5% had between four and six children. Most participants were living with their spouses (73%) and on a low income (51%).

3.7. Psychometric Properties of the QoL (CASP- 19)

The exploratory factor analysis was conducted on the terms, using principal components analysis. Factor analysis revealed four factors with an eigenvalue above 1.0, together accounting for 70.50% of the total variance.

Table 1 shows the rotated matrix of the terms. The KMO index was 0.852. The Bartlett's sphericity test score was 2.699 determined as statistically significant at P = 0.0001 level; this justified the use of factor analysis according to the results of the correlation matrix of the study sample.

An independent sample T-test was run to evaluate the discriminant validity of the subscales of the Persian version of the CASP-19 based on presence or absence of curtailment of personal autonomy in a parameter. There was statistically significant difference determined in the expected direction of almost all aspects and points in the total inventory (excluding scale of pleasure). In other words, the elderly people who had experienced violation of their individual rights scored lower in all dimensions (excluding scale pleasure) and in total points given to the questionnaire. It is noteworthy that a higher score in the questionnaire indicated a better life quality (Table 2).

Correlations between dimensions of the Persian version of the CASP-19 and dimensions of the SF-36 were calculated to assess convergent validity. There were significant correlations between most of the dimensions of the two questionnaires (r = 0.38, P < 0.001), (Table 3).

Table 4 shows estimates of internal consistency and test-retest reliability. Cronbach's alpha coefficient was determined for each dimension and the total scale was calculated in a sample of 200 elderly people and the results ranged from 0.93 to 0.97.

Test-retest reliability was evaluated in a sample of 30 elderly people, using the intra-class correlation coefficient (ICC). Table 4 shows the test-retest reliability estimates (test-retest) for the dimensions and the total score of the Persian version of the CASP-19, using the intra-class correlation coefficient (ICC). According to the obtained values, there was a high level of agreement between scores on the two administrations of the questionnaire (P< 0.0001); this confirmed repeatability of the Persian version of the CASP-19 and its subscales and respectively indicates high reliability of the questionnaire.

There were positive and significant correlations between all dimensions (P < 0.001). The highest correlation coefficient was observed between the dimensions of pleasure and control (r = 0.57), while the lowest was observed between those of Self-realization and Autonomy (r = 0.21). The Cronbach's alpha coefficient for the entire scale (19 items) was 0.97, while for the total of all dimensions was more than 0.70.

4. Results

The main aim of this study was to analyze the psychometric properties of quality of life (CASP- 19). The internal consistency (Cronbach's α) obtained for the global scale was excellent and similar to that of the English version of the scale (14).

The face validity was given approval by the elderly. Content validity of the Quality of Life Questionnaire (CASP- 19) was evaluated and confirmed by specialists using the content validity index (CVI) and scale-level content validity index/averaging calculation method (S-CVI / Ave). According to S-CVI / Ave inventory by Polit and Beck (2006), an index of 0.98 was desirable. So, any index of 0.90 and/or higher is recommended for application of S-CVI/Ave (25). As a result, based on the results obtained by several experts, content validity of the Persian version of the quality of life (CASP-19) was approved.

Factor analysis was used to evaluate the construct validity of the 19 items of the Persian version of the quality of life (CASP-19). The KMO (0.85) measure and Bartlett's test (P < 0.001) confirmed the required score for factor analysis. Since the minimum load factor, required to include a statement in a factor, depends on the number of and specific value of the item of a tool, a cut-off point of 0.4 was determined as the minimum load factor to maintain each item. Then, the statement with the highest load on each of the four factors was considered to relate to that factor, and it was not different from the original questionnaire (8, 14). Considering that the minimum factor loading for all phrases was higher than 0.4, all items of the questionnaire were maintained. Exploratory factor analysis was conducted using the varimax rotation method, it showed four factors (dimensions) that were given equivalent names to the original; i.e. control, autonomy, self-realization and pleasure (8). It is worth mentioning that each item was designed to represent the similar dimension as the original document as cited in Hyde et al. 2003) (14). Kim et al. (2015), Lima et al. (2014), and Sexton et al. (2013). These studies also used factor analysis to determine construct validity evaluations of the older People's quality of Life questionnaire (CASP-19) (16, 18, 26).

In this study, to assess the construct validity of the questionnaire, in addition to factor analysis, comparison of known groups was used as the parameter showing Violation of individual rights in the elderly (type of abuse). Analysis based on comparing the known groups showed that

Table 1. Factor Loading of the Older People's Quality of Life Questionnaire (CAPS-19) Items[a]

Factors and Items	Factor Factor Loading	Percentage of Variance Explained	Eigenvalue
Control		21.871	4.155
1- My age prevents me from doing the things I would like to do.	0.586		
2- I feel that what happens to me is out of my control	0.762		
3- I feel free to plan for the future	0.852		
4- I feel left out of things	0.678		
5- I can do the things I want to do	0.745	17.409	3.308
6- Family responsibilities prevent me from doing the things I want to do	0.402		
Autonomy			
7- I feel that I can please myself what I do			
8- My health stops me from doing things I want to do	0.826		
9- Shortage of money stops me doing things I want to do	0.780		
10- I look forward to each day	0.676	17.360	3.298
11- I feel that my life has meaning	0.740		
Self-realisation			
12- I choose to do things that I have never done before	667		
13- I feel satisfied with the way my life has turned out	0.808		
14- I feel that life is full of opportunities	0.813		
15- I feel that the future looks good for me	0.849	13.915	2.644
Pleasure			
16- I feel full of energy these days	0.779		
17- I enjoy the things that I do	0.865		
18- I enjoy being in the company of others	0.704		
19- On balance, I look back on my life with a sense of happiness	0.672		

[a] Kaiser-Meyer-Olkin measure of sampling adequacy = 0.852, Bartlett's test of Sphericity was significant (P < 0.001).

Table 2. Comparison Known Groups: Average rating CASP-19 Questionnaire Based on the Presence or Absence of Authority Divest

Variables	Mean Score (SD)		P Value
Scale	**Absence of Authority Devest (N = 165)**	**Presence of Authority Devest (N = 35)**	
Control	4.48 (1.35)	3.43 (1.11)	0.00001
Autonomy	6.91 (1.46)	6.18 (0.79)	0.00001
Self-realisation	9.14 (7.38)	7.56 (4.47)	0.00001
Pleasure	12.23 (2.99)	9.40 (3.54)	0.071
Total	30.98 (5.39)	28.65 (5.25)	0.012

validity of the parameters was approved (with the exception of scale pleasure). The results of the study Heravi et al., (2013) showed that elderly people who hadn't experienced abuse reported a significantly better quality of life than those who had experienced a Violation of their rights. Similarly, groups of elderly people that had experienced a Violation of individual rights had significantly lower scores (27). Studies by Jayawardena and Liao (2006) and Soares et al., (2010) showed that a history of abuse decreased quality of life (28, 29).

To examine the convergent validity, the correlation coefficients and significant level of scores were calculated between the Persian version of the CASP-19 and SF-36 questionnaire. Among all dimensions of the two questionnaires, apart from the autonomy of CASP-19 inventory with dimensions of physical functioning and bodily pain in the

Table 3. Correlation Coefficients and a Significant Level of Specific Between the Persian Version of Older People's Quality of Life Questionnaire (CASP- 19) and Scores of SF-36 Questionnaire

Quality of Life, N = 200	Control	Autonomy	Self-Realisation	Pleasure	Total CAPS-19
Physical functioning	0.366[a], 0.0001	0.148[b], 0.36	0.185[a], 0.009	0.185[a], 0.010	0.152[b], 0.032
Role limitations due to physical problems	0.271[a], 0.0001	0.142[b], 0.045	0.200[b], 0.004	0.222[a], 0.002	0.210[a], 0.003
Bodily pain	0.288[a], 0.0001	0.064, 0.518	0.143[b], .044	0.194[a], 0.006	0.160[b], 0.024
General health	0.541[a], 0.0001	0.377[a], 0.0001	0.330[a], 0.001	0.513[a], 0.0001	0.388[a], 0.0001
Vitality	0.569[a], 0.0001	0.389[a], 0.0001	0.236[a], 0.001	0.462[a], 0.0001	0.272[a], 0.0001
Social functioning	0.467[a], 0.0001	0.168[a], 0.017	0.142[b], 0.045	0.350[a], 0.0001	0.190[a], 0.007
Role limitations due to emotional problems	0.392[a], 0.0001	0.215[a], 0.002	0.175[a], 0.013	0.312[a], 0.0001	0.203[a], 0.004
Mental health	0.513[a], 0.0001	0.244[a], 0.0001	0.260[a], 0.0001	0.327[a], 0.0001	0.276[a], 0.0001

[a] Correlation is significant at the 0.01 level.
[b] Correlation is significant at the 0.05 level.

Table 4. Determine the Stability Intraclass Correlation Coefficient (ICC) Persian Version of Older People's Quality of Life Questionnaire (CASP- 19)[a]

Dimensions	Number of Items	Mean Score (SD), N = 40	Cronbach's Alpha Coefficient	ICC	CI = 0.95		P Value	Pearson Correlation Coefficients				
					Min	Max		C	A	P	S	Total
Control (C)	4	3.32 (1.04)	0.93	0.87	0.77	0.93	0.0001	1				
Autonomy (A)	5	6.4 (1.4)	0.93	0.88	0.78	0.94	0.0001	0.398	1			
Pleasure (P)	5	12.40 (3.31)	0.98	0.96	0.93	0.98	0.0001	0.579	0.330	1		
Self-realisation (S)	5	8.47 (3.70)	0.98	0.98	0.95	0.98	0.001	0.315	0.218	0.275	1	
Total	19	30.75 (5.30)	0.97	0.94	0.90	0.97	0.00001	0.308	0.106	0.635	0.868	1

[a] P < 0.001 for all coefficients.

SF-36 questionnaire, correlation was observed for all the other items and dimensions. Sim et al., (2011), Kim et al., (2010) and Bowling (2009) tended to determine the convergent validity of the SF-12, SF-10 questionnaires; in doing so, WHOQOL-OLD and OPQOL respectively were used and showed that there was a strong correlation between the CASP-19 questionnaire and most of the dimensions (7, 26, 30).

In this study, Cronbach's alpha coefficient of the translated questionnaire indicated good internal consistency reliability that confirmed reliability of the Persian version of quality of life questionnaire. Wu et al. (2013), Wiggins et al. (2008), and Lima et al. (2014) used Cronbach's alpha at high level to determine the reliability of internal consistency of the older People's quality of Life questionnaire (15-17). However, in a study by Kim et al., (2015) Cronbach's alpha of CASP- 19 dimensions were reported at between 0.74 to 0.78 (26).

Reliability of the Persian version of the questionnaire was evaluated by the test-retest method. Results of these two tests within a two-week interval approved stability of the questionnaire.

5. Discussion

As the first report from Western Asia especially the Persian Gulf region, the current study adds something new to the literature. The questionnaire can be used to measure outcomes in areas of health research and health care. It seemed to be a simple questionnaire with features such as scoring, reliability and validity that can be completed in a relatively short time and applied in various different situations. In addition, a health-related quality of life questionnaire can be used in case studies to assess the effect of different treatments on quality of life. Since the concept of quality of life was associated with nursing, nurses can use this tool to obtain comprehensive information on patients' quality of life and make more precise plans for them.

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Footnotes

Authors' Contribution: Majideh Heravi-Karimooi, Nahid Rejeh, Ahya Garshasbi, Ali Montazeri and Razieh Bandari

conceived and designed the evaluation. Majideh Heravi-Karimooi and Nahid Rejeh collected the clinical data. Majideh Heravi-Karimooi, Ahya Garshasbi and Ali Montazeri interpreted the clinical data. Majideh Heravi-Karimooi, and Razieh Bandari performed the statistical analysis. Majideh Heravi-Karimooi, Nahid Rejeh, Ahya Garshasbi, Ali Montazeri and Razieh Bandari drafted the manuscript. Majideh Heravi-Karimooi, and Razieh Bandari revised the manuscript according to the reviewers' comments. All authors read and approved the final manuscript.

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