ORIGINAL ARTICLE

Psychometric Properties and Cut-Off Points of Persian Version of PPRI 12-Items among Older Veterans in Iran

Leila Ghahremani[1], PhD, MSc; Fatemeh Maghsoudi[2], MSc; Abdolrahim Asadollahi[2, 3], PhD, MSc

[1]Department of Health Promotion and Education, Faculty of Health, Shiraz University of Medical Sciences, Shiraz, Iran
[2]Department of Health Promotion and Aging, Faculty of Health, Shiraz University of Medical Sciences, Shiraz, Iran
[3]Middle East Longevity Institute in Abyad Medical Centre, Azmi Street, Abdo Center, Tripoli, Lebanon

Correspondence:
Abdolrahim Asadollahi, PhD, MSc; Department of Aging Health, School of Health, 3rd Floor, Shiraz University of Medical Sciences, Razi Ave, P.O. Box: 71536-75541, Shiraz, Iran
Tel:+98 9122498890
Email: a_asadollahi@sums.ac.ir
Received: 28 October 2021
Revised: 11November 2021
Accepted: 3 December 2021

Abstract

Background: Aging and retirement are a passage to a new course of life for veterans. The role of army grandparents in relation with their adult children is important; therefore, it is necessary to study grandparent-adult children interactions during retirement. Unfortunately, there was no Iranian version of an instrument to measure this interaction. Hence, the study aimed to evaluate the Persian version of the Perceived Parenting Roles Inventory (PPRI-2019). The translation process was conducted based on WHO's guidance of instruments translation and adaptation.

Methods: The research method was descriptive and had a psychometric type. A total of 251 grandparents were randomly selected from the Iranian Veterans Association. The PPRI and demographic questionnaire were used to gather data at the end of 2019. The scale structure was evaluated using confirmatory factor analysis (CFA). Cronbach's alpha assessed internal consistency and the optimal cut-off points were obtained by calculating the area under the curve (ROC). Data were analyzed using IBM-SPSS version 26 and AMOS version 24.

Results: The construct validity of PPRI based on CFA showed that the two subscales explained a total of 73.017 % of the variance. The PPRI scale demonstrated excellent reliability, and Cronbach's alpha obtained 0.792 for the entire scale (P<0.000). The optimal cut-off point of PPRI was 19.50, with a sensitivity of 100%, a 1-specificity of 0.127.

Conclusion: Based on the results, the Persian version of PPRI is a valid and reliable tool that other researchers can use to measure perceived parenting roles among other retirees. But further investigations are suggested.

Please cite this article as: Ghahremani L, Maghsoudi F, Asadollahi AR. Psychometric Properties and Cut-Off Points of Persian Version of PPRI 12-Items among Older Veterans in Iran. J Health Sci Surveillance Sys. 2022;10(1):44-49.

Keywords: Factor analysis, Iran, Grandparents, Parenting roles, Psychometrics

Introduction

The explosion of the world's aging population has been a significant demographic change in human history.[1] According to the World Health Organization prediction, the world's elderly population will reach 973 million by 2030 and more than 2 billion by 2050.[2] Iran's population is also aging rapidly along with the world's population. It is estimated that more than 12 percent of the Iranian people will be over 60 years of age in 2020.[3] Aging and retirement refer to a period of human life, preparing the transition from a sector to another and transferring to a new stage of life.[4, 5] Military retirees constitute a community that is less studied.[6] Joining the military is an important milestone in early adulthood; war experience as a hidden variable affects how people are aging.[7] Veterans' performance and post-military stress affect their family and function.[8] Population aging has

a profound effect on the family structure.

The trend of demographic change and increased life expectancy have made significant changes in the composition of families and structure of different generations, which affects the family health and their chances of receiving mutual support when needed. Despite changes in the family structure, intergenerational relationships have remained strong.[1] The family members' support of each other is vital throughout lives.[9] Most parents provide housing for their adult children who receive parental assistance. Children's unemployment in their early 30s does not allow them to become independent.[10, 11] Therefore, family is the best environment that allows all children's needs to be met.[12] The effects of demographic and sociological factors on intergenerational family support (adult children and parents) have been investigated in intergenerational studies.[13] Although intergenerational relationships focus on parent-youth interactions, relationships between older parents and their children should also be considered. The relation between adult children and aging parents is an issue of confusion in Gerontology; and it is essential to research the interaction of retired parents and children.[14] The intergenerational relationships in Iran as a society of transition to the new stage double up the importance and necessity of research in this field. Finally, there is a need for a tool to explain the parents' role towards their children during the retiring period. Due to the lack of such a tool in Iran, the study sought to determine a retiree's role and position in relation with young children during the retirement period, and prepare Iranian version of PPRI-12 items in the 2nd midyear-2019.

Methods

Since the present study aimed to determine the psychometric properties and cut-off points of the PPRI-2019 in the Iranian Veterans Association (IVA) 's aging population, the research method was descriptive and had a psychometric type. The inclusion criteria consisted of all members of the IVA above 55 years of age. The exclusion criteria were the unwillingness to participate in the study and the incomplete questionnaire. According to Tinsley and Kass's (1979) sample size in factor analysis research, 5 to 10 participants were enough for each questionnaire question. Also, a sample size of at least 100 individuals was suggested.[15] Finally, the sample size of 251 was considered according to the number of items and the possibility of loss, using the simple random method by their official code number in the internal system of retirement affairs. The demographic questions (researcher-made) and PPRI-2019 with 12-items were used in the present research to measure research variables.[16] Demographic information included age, gender, marital status, chronic underlying disease, education level, pension status, and health level. The last item is related to health situation answering how would they rate their health overall? It's in Likert format i.e., 5. "Very healthy.", 4. "I feel good healthy.", 3. "I have a few problems that are well-managed.", 2. "To some extent, I have good days and bad days.", 1. "Poor – my health significantly limits what I can do". The perceived parental role in retirement inventory (PPRI) was used by Vassallo et al.[16] to study the parents' roles in their young children's lives. The questionnaire expressed the role of a retired veteran in connection with their young children during retirement.

The quality and severity of the relationship were determined for each parent-guide and material-financial support roles by selecting one of the "strongly agree to strongly disagree" options with a score of 1 to 5 using the Likert scale. The PPRI has 12 items, and the possible range is from 12 to 60; higher scores indicate a more positive parental role in the retirement period. Like Vassallo's study, the first six items of PPRI were put in parent-guide factor (Cronbach's alpha=0.74), and the second five items were placed in the material- financial support role factor (Cronbach's alpha=0.67). item 12 was put in any of the subdomains and was separately analyzed. The translation of the original questionnaire version was based on the WHO Protocol. First of all, the original questionnaire version was provided for two individuals who had enough experience and for experts who are native in Persian in translating English texts. At the second step, two individuals agreed on translating words and sentencesNext, the Persian version translated by two experts was retranslated to English by another person (reverse translation). Then, the English version was compared with the original English version to ensure they have the same concept and finally an advisor approved it. The construct validity was approved using the exploratory factor analysis (EFA) by Varimax rotation and confirmatory factor analysis (CFA) using the principal component analysis (PCA). The parallel analysis was used to determine the number of extractable factors. Kaiser-Meyer-Olkin's measure of sampling adequacy (0.733) and Bartlett's Test (≤0.05) were also calculated. In the next step, the extracted factors were evaluated using the confirmatory factor analysis based on the most common goodness of fit indices of the structural equation model.[17]

Validity and Reliability

The content validity ratio (CVR) and content validity index (CVI) were extracted by an expert panel. The CVI and CVR were calculated for each item (minimum and maximum acceptable CVR=0.75 and 1, respectively, and minimum and maximum acceptable CVI=0.85 and 1 for all items). All items adequately were in terms of CVI and CVR (higher than 0.85 and 0.75), and no items were removed.[18]

Total CVI and CVR (average of CVIs and CVRs of all items) were 0.94 and 0.90, respectively. The Cronbach's alpha coefficient assessed the internal consistency. Cronbach's alpha coefficient is often considered to be more than 0.70. For calculation of the ICC. All statistical analyses and ROC curve drawing were performed to determine the cut-off points with the help of SPSS 26 and AMOS 24;[19, 20] and the data normality was checked and confirmed using the Kolmogorov-Smirnov test (P=0.824) and D'Agostino's K-squared test (P=0.792). The questionnaires were completed using face-to-face interviews by trained individuals with communication skills. They were invited to respond to the veterans' club scale due to the convenient and confidential environment for filling the questionnaire. The average time to complete the questionnaires was 15 minutes for each person; and in two-month intervation from July 23 to November 15, 2019.

Ethical Considerations

All participants entered the study with conscious consent; and the present study was conducted according to the Declaration of Helsinki and COPE's rule after obtaining the license from the ethics committee of Shiraz University of Medical Sciences with a code (IR.SUMS.REC.1399.138).

Results

The mean and standard deviation of research samples' age were 65.16 and 10.06. 19% (19 persons)were female and 81%(81 persons) were male; 83% had high school diplomas and attended elementary school, and 17% had academic degrees, 88% were married, 3% were divorced, 7% were widows/widowers, 53% had chronic diseases (e.g., high blood pressure, diabetes). About 21 percent of the participants said, "I'm healthy, but I have a few problems that are well-managed", and 30.02% claimed their health situation is "Poor – my health significantly limits what I can do" and about 17% were pensioners. The mean score of PPRI was 22.24 (standard deviation: 6.004) that had a normal distribution, indicated by the Kolmogorov-Smirnov and D' Agostino K^2 tests (≥0.05).

Exploratory Factor Analysis

Bartlett's Test of Sphericity and Kaiser-Meyer-Olkin measure of sampling adequacy (KMO=0.733, Bartlett's Test of Sphericity=764.819, df=66, P≤0.001) were first conducted to perform the EFA, and then was performed using the CFA in two separate populations (n=251). In other words, the questionnaire had latent subscales and common features. Two factors, the Advice and Guide Role (AGR) and Material Aid Role (MAR) were extracted in the EFA. The PCA performed Extraction of factors with 3-time Varimax rotation and 3-time Oblimin rotation, and normalization by Kaiser's method with an Eigenvalue of above 0.87 (completely desirable). According to Table 1, two subscales were obtained among 12 questions of the tool with the Varimax method, including 1- AGR subscale with a mean factor loading of 0.60, and 2- MAR subscale with a mean factor loading of 0.56. The mean factor loadings of 0.62 and 0.51 were obtained in the Oblimin method for AGR and MAR subscales, respectively. The above two latent factors for the AGR and MAR had eigenvalues of 0.87 and 0.91, respectively, and explained a 73.017% of the total construct variance. According to Table 2, the model fit indices confirmed model's suitability. Furthermore, the factors' internal consistency and construct reliability were respectively equal to 0.88 and 0.90 in two extracted factors, AGR and MAR, in the PPRI. Cronbach's alpha was 0.792 and ICC=0.792, and the Kappa coefficient score was 0.640 for the 5-point Likert score (P=0.000). The mean scores for all questions were 22.24 and 11.9 and 9.76 for the AGR and MAR subscales, respectively.

Confirmatory Factor Analysis

After accepting the factor loading and distribution of factors in the EFA, the CFA was performed in another sample population of 251. Confirming the model presents the most important goodness

Table 1: Rotated Component Matrix in Varimax and Oblimin Rotation with Principal Component Analysis for Perceived Parenting Roles Inventory(PPRI)

Items	Extracted Factors with Varimax Rotation (3 Iterations)		Extracted Factor with Oblimin Rotation (3 Iterations)	
	AGR	MAR	AGR	MAR
PPR.4	0.723		0.719	
PPR.6	0.655		0.716	
PPR.1	0.584		0.660	
PPR.5	0.581		0.655	
PPR.2	0.580		0.512	
PPR.3	0.481		0.504	
PPR.8		0.780		0.725
PPR.7		0.725		0.559
PPR.9		0.559		0.539
PPR.11		0.539		0.504
PPR.10		0.504		0.437
PPR.12		0.301		0.297

Table 2: Area Under the Curve, Sensitivity, Specificity, and Youden's Index for Possible Cut-off Points of Perceived Parenting Roles Inventory(PPRI) & its Domains

Test Result Variables	AUC	95% CI		Mean (SD)	P [a]	Cut-off Point (≥)	Sensitivity	1-Specificity	Youden's J	D Value	DIFF	LR+	LR-
		Lower Bound	Upper Bound										
AGR	0.725	0.648	0.802	11.9 (3.04)	0.000	9.5	1.000	0.230	0.770	0.053	0.230	0.210	-0.229
MAR	0.850	0.684	0.910	9.76 (3.52)	0.000	10.5	1.000	0.208	0.792	0.043	0.208	0.218	-0.223
PPR	0.860	0.610	0.925	22.24 (6.01)	0.000	19.5	1.000	0.127	0.873	0.016	0.127	0.227	-0.125

a. Two-sided Chi-squared test, P≤0.05. Abbreviations: AUC=area under curve; CI=confidence interval; DIFF=abs (sensitivity– specificity); D Value or K-Index=Sqrt ((1-Sensitivity) ² + (1-Specificity) ²); LR=Likelihood Ratio (Behling & Law, 2000; Kallner, 2018).

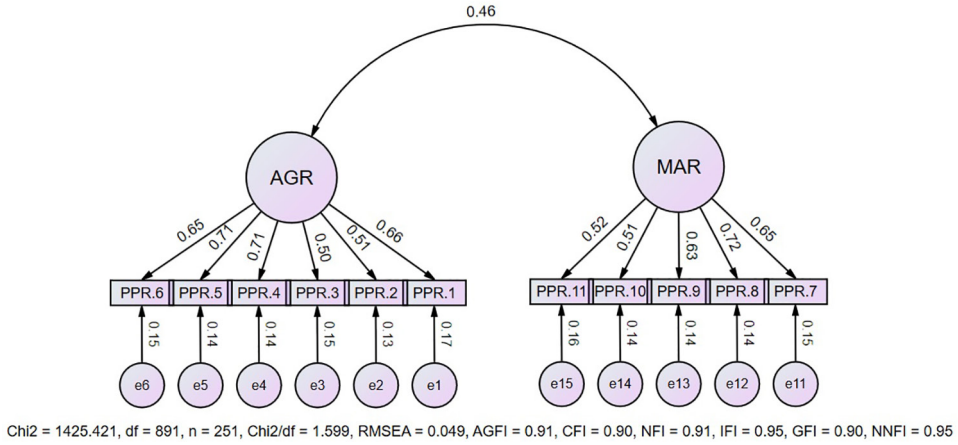

Figure 1: Path Diagram for the Confirmatory Factor Analysis of Two Domains of the Perceived Parenting Roles Inventory (PPRI), 12-Items

Table 3: The One-way ANOVA for Subscales Factors Based on Health Status (N=232, ρ ≤ .05)

Subscales	Source of Variation	Mean (SD)	Sum of Squares	df	Mean Square	F	Eta Squared	Sig.
AGR	Between Groups	11.09 (3.04)	15.618	3	5.206	1.559	0.235	0.002
	Within Groups		2122.658	228	9.310			
	Total		2138.276	231				
MAR	Between Groups	9.76 (3.52)	8.054	3	2.685	1.214	0.205	0.006
	Within Groups		2853.907	228	12.517			
	Total		2861.961	231				
PPR	Between Groups	22.24 (6.01)	44.915	24	1.871	1.995	0.307	0.005
	Within Groups		194.188	207	0.938			
	Total		239.103	231				

of fit indices i.e. $\chi 2$=14.08, df=10, $\chi 2$/df≤3=1.408, RMSEA=0.042, AGFI=0.90, GFI=0.91, TLI=0.90, CFI=0.90, NFI=0.91. The results indicate the good fit in the questionnaire's distribution of factors in the questionnaire's internal distribution model. Its structure has good quality; hence, measuring the perceived parental role in retirement can be reliable. According to Figure 1, two latent variables were identified and were named the AGR and MAR according to Vassallo's concepts.[16]

ROC Curve Analysis and Cut-off Points

The cut-off points of two primary subscales of the perceived parental role in retirement, namely the AGR and MAR, were obtained according to Table 2 and the distribution of the ROC curve. Scores of the area under the ROC curve indicate the proper detection ability of the scales; and the scores of 0.725 and 0.650 for the AGR and MAR subscales, respectively, and Youden's J scores of distance squared were at the desired levels. Youden's J and distance squared, two statistical indices determine the optimal cut-off point and acceptance of the area under the ROC curve. Still, the Youden's J index of equal to or above 0.60 and the distance squared (D value) less than 0.2 indicate the desirable cut-off points of the tool. The total specificity was 0.35, the AGR index was 0.32 and the MAR index was 0.62. The cut-off point was also equal to 19.50 for PPRI and 9.50 and 10.50 for AGR and MAR subscales, respectively (P≤0.001).

Analysis of Variance for Health and PPR

As shown in Table 3, the mean scores of AGR and MAR and the total PPR index score were significantly

different in terms of the health level. They were equal to 11.09, 9.76 and 22.24, respectively. The total score change of PPR explain 30.7% of the variance of the aging health index. On both subscales and total scores, the explanatory power had a significant effect on the health index of veterans and retirees. (P≤0.05)

Discussion

Results of the present study indicated that the questionnaire had the necessary validity and reliability to measure the perceived parental role in retirement. The study was conducted on 251 retirees of IVA in the second midyear-2019. The PPRI had high validity and reliability according to the CVI and CVR, Fleiss's Kappa index, Cronbach's Alpha, and ICC score. Using the EFA, the distribution of factors was extracted by the PCA and the Varimax rotation. Two subscales of the primary variable were identified and named AGE and MAR using the CFA. So, the PPRI can be divided into two subdomains as well. The results indicated a positive relationship between parents and their young children.

Parents intervened closely in lives of their young adult children through counseling and support, and it was considered very valuable by most young people. On the contrary, the parents tended to underestimate the support received from young children in their relations. Cronbach's alpha coefficients of the questionnaire were 0.74 and 0.67 for AGR and MAR, respectively, close to Cronbach's alpha obtained from Vassallo's results.[16] Family support is vital throughout life. Family members' support may be considered a stressful or rewarding experience; hence, these perceptions play crucial roles in the psychological consequences of providing support.[9] Recent studies on the link between veterans' health, relationship with family, retirement roles, and association with the general public have reported that they have helped their older children learn more about multiple issues or dealing with life changes. Most parents see their roles as individuals available for conversation and dialogue with their children when problems arise, but they are afraid that their children will consider their suggestions as interference; hence, they do not help their unwanted requests and thus become strangers with their children.[21-23] These studies indicate the importance of parents' roles as a family source, supporters, and counselors for adult children in the family that may still be incomprehensible to children and even parents' health. Given the importance of parents' roles in adult children's lives in the family and the need for recognizing these roles, the present study analyzed the appropriate tools that could accurately assess the functions. Due to the validity of findings in the present study, and since the research samples were collected from the IVA, current study results can be generalized to the retired Iranian parents.

Conclusion

Results of the present study indicated that the PPRI had good validity and reliability, and it could be used to examine the Iranian parents' perceived roles. It is suggested to normalize the tool in other studies due to different cultures and values in divergent regions of Iran and other countries . Further studies can be conducted on the validation of the inventory.

Limitations

The study had limitations, including lack of access to women veterans because a significant number of the IVA were men. There was a need for a lot of trust due to the particular military situation in the Army Center to attract attention and requestto fill out the questionnaire. Other limitations of the study were the lack of studies that used the tool and the lack of similar studies on parents' role in adult children's lives; hence, the researcher had access to few valid scientific sources.

Strengths

The scale could be applied to other Persian-speaking communities like Afghanistan and Tajikistan as well.

Acknowledgments

The research team would like to express its gratitude and appreciation for the cooperation of the officials of the Shiraz Veterans Association and the staff of Shiraz University of Medical Sciences, and especially the valuable participants of the present study.

Conflicts of interest: None declared.

References

1 Furstenberg FF, Hartnett CS, Kohli M, Zissimopoulos JM. The future of intergenerational relations in aging societies. Daedalus. 2015;144(2):31-40.

2 Paltasingh T, Tyagi R. Demographic transition and population ageing: Building an inclusive culture. Social Change. 2012;42(3):391-409.

3 Honarvar B, Gheibi Z, Asadollahi A, Bahadori F, Khaksar E, Faradonbeh MR, et al. The impact of abuse on the quality of life of the elderly: a population-based survey in iran. Journal of preventive medicine and public health. 2020;53(2):89.

4 Christ SL, Lee DJ, Fleming LE, LeBlanc WG, Arheart KL, Chung-Bridges K, et al. Employment and occupation effects on depressive symptoms in older Americans: does working past age 65 protect against depression? The Journals of Gerontology Series B: Psychological Sciences and Social Sciences. 2007;62(6):S399-S403.

5 Carr DC, Moen P, Perry Jenkins M, Smyer M.

Postretirement life satisfaction and financial vulnerability: The moderating role of control. The Journals of Gerontology: Series B. 2020;75(4):849-60.

6 Rebeira M, Grootendorst P, Coyte PC. Determinants of chronic physical health conditions in Canadian Veterans. Journal of Military, Veteran and Family Health. 2015;1(2):32-42.

7 Pruchno R. Veterans aging. Oxford University Press US; 2016.

8 Sullivan K, Kintzle S, Barr N, Gilreath TD, Castro CA. Veterans' social–emotional and physical functioning informs perceptions of family and child functioning. Journal of Military, Veteran and Family Health. 2018;4(2):37-47.

9 Bangerter LR, Polenick CA, Zarit SH, Fingerman KL. Life problems and perceptions of giving support: implications for aging mothers and middle-aged children. Journal of family issues. 2018;39(4):917-34.

10 Guo M, Stensland M, Li M, Beck T, Dong X. Transition in Older Parent–Adult Child Relations in US Chinese Immigrant Families. The Gerontologist. 2020;60(2):302-12.

11 Choi H, Schoeni RF, Wiemers EE, Hotz VJ, Seltzer JA. Spatial distance between parents and adult children in the United States. Journal of Marriage and Family. 2020;82(2):822-40.

12 Świderska M. The importance of family support in old age. Pedagogika Rodziny. 2014;4(1):15-22.

13 Wetzel M, Hank K. Grandparents' relationship to grandchildren in the transition to adulthood. Journal of Family Issues. 2020;41(10):1885-904.

14 Eibich P, Siedler T. Retirement, intergenerational time transfers, and fertility. European Economic Review. 2020;124:103392.

15 MacCallum RC, Widaman KF, Preacher KJ, Hong S. Sample size in factor analysis: The role of model error. Multivariate behavioral research. 2001;36(4):611-37.

16 Vassallo S, Smart D, Price-Robertson R. The roles that parents play in the lives of their young adult children. Family Matters. 2009(82):8.

17 Kallner A. Formulas. Laboratory Statistics: Elsevier; 2018. p. 1-140.

18 John OP, Benet-Martínez V. Measurement: Reliability, construct validation, and scale construction. 2014.

19 SPSS for Windows 24.0 [Computer software]. (2016). Chicago IBM.

20 AMOS for Windows 24.0 [Computer software]. (2016). Chicago IBM.

21 Liu H, Feng Z, Jiang Q, Feldman MW. Family Structure and Competing Demands From Aging Parents and Adult Children Among Middle-Aged People in China. Journal of Family Issues. 2020;41(2):235-61.

22 Guo M, Stensland M, Li M, Dong X. Parent–adult child relations of Chinese older immigrants in the United States: Is there an optimal type? The Journals of Gerontology: Series B. 2020;75(4):889-98.

23 Birditt KS, Polenick CA, Van Bolt O, Kim K, Zarit SH, Fingerman KL. Conflict strategies in the parent–adult child tie: Generation differences and implications for well-being. The Journals of Gerontology: Series B. 2019;74(2):232-41.