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Modeling Quality of Life Based on Perceived Stress and Distress Tolerance of the Elderly in Ilam: The Mediating Role of Hardiness

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Abstract

Objective: This study aimed to model quality of life based on perceived stress and distress tolerance of the elderly in Ilam with the mediating role of hardiness. This applicable study was conducted through descriptive-structural equation modeling.

Method: The statistical population was elderly people of Ilam city (N=9496) during 2020. The sample size was calculated at 384 cases using Power-G software (2007). The sample was selected by aim-oriented sampling method based on inclusion criteria in public places of Ilam city. Participants completed the standard questionnaires of the quality of life World Health Organization (1996), Cohen Perceived Stress (1994), Distress Tolerance Scale of Simmons and Gohar (2005), and the Kobasa hardiness Questionnaire (1982). Data was analyzed in SPSS25 and Amos -25 software.

Results: The results showed that there is a significant relationship between perceived stress, distress tolerance, and hardiness with the quality of life of the elderly in Ilam city. Similarly, there is a significant relationship between perceived stress and distress tolerance with Hardiness.

Conclusion: The results of the structural equation model showed hardiness has a mediating role in the relationship between quality of life with distress tolerance and perceived stress. They have a total, direct, and indirect effect on variables.

Keywords: Stress, Distress, Hardiness, Quality of life, Elderly.

Introduction

The world's elderly population is growing. The elderly population expected to reach 32% in 2030 (Trevisan, Cristina-Pereira, Silva-Amaral & Aversi-Ferreira, 2019). Increasing the population requires changes in facilities and social conditions. As people in society get older, the needs of these people should be included in the guideline policies of the countries (Dieleman et al., 2017). The elderly need more attention and care than other people due to their poor physical condition (De Cabo & Mattson, 2019). Significant social and economic impacts may occur if the needs of the elderly are not addressed in time (Chang, Skirbekk, Tyrovolas, Kassebaum & Dieleman, 2019). Preventing psychological and economic costs in old age is possible only by increasing the quality of life (Chen & Chen,

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2017). Increasing the quality of life leads to lower health care costs and higher efficacy for the elderly (Association & Association, 2013).

The concept of quality of life is very important in chronic disease and old ages (Farajzadegan et al., 2021). Stress is a common phenomenon in the last century negatively affecting various dimensions of mental and physical health (Harmell, Jeste & Depp, 2014). Stress is one of the major and pervasive issues in old age (Åström, Rönnlund, Adolfsson & Grazia Carelli, 2019), which is one of the mortality risk factors (Seangpraw et al., 2019). Especially during the outbreak of covid19, which has become widespread throughout the world in the last two years, stress has increased significantly (Shah, Mohammad, Qureshi, Abbas & Aleem, 2021). The prevalence of stress and anxiety among the elderly population is growing (Hosseini, Sharifi & Jamali, 2021). A person's perception of the situation and assessment of mental states can play an essential role in the quality of life. Therefore, the concept of perceived stress is the stress that a person perceives based on his evaluation and is different from stress (Tavakoli & Kazemi-Zahrani, 2018).

Individuals may experience different stresses in similar situations (Osmanovic-Thunström, Mossello, Åkerstedt, Fratiglioni & Wang, 2015). Cognitive and personality factors such as stress tolerance can change how a person perceives stress (Felton et al., 2017). Distress tolerance is defined as a person's perceived ability to experience and tolerate negative emotional states or the ability to persevere in goal-oriented behavior when experiencing emotional distress (Simons & Gaher, 2005).

People with low distress tolerance find emotion unbearable and do their best to prevent negative emotion and immediate relief (Simons & Gaher, 2005). People with low distress tolerance experience more stress and anxiety (Hancock & Bryant, 2018). Low distress tolerance can reduce the quality of life (Alsaid-Habia, McLeish & Kraemer, 2019), and distress tolerance leads to increasing mental health problems (Robinson et al., 2021).

Approaches in recent decades in psychology consider the importance of mediators. This issue has attracted the attention of researchers to psychological variables as mediators of perceived effects of stress. Studies have shown that stress and quality of life do not affect people in the same way and some variables may mediate this relationship. Hardiness is one of the variables that is mentioned as a protective factor in stressful situations and some studies showed an inverse relationship between this variable and perceived stress (Vagni, Maiorano, Giostra & Pajardi, 2020).

Hardiness can also affect the quality of life. This personality trait has played a mediating role in studies that have examined the quality of life (Haj Hashemi, Atashzadeh-Shoorideh, Oujian, Mofid & Bazargan, 2021). Hardiness is composed of the components of commitment, control, and challenge (Maddi, 2006). It seems that these characteristics can also improve the quality of life by modulating stress (Haj Hashemi et al., 2021). Sorati (2017) concluded that perceived stress mediates the relationship between rigidity and quality of life (Sorati, 2017). In another study, the results showed a mediating role of hardiness between lowliness and depression (Ng & Lee, 2020). In old age, many physical and psychological changes occur and if they do not have enough hardiness to deal with stress, they consider the issues as catastrophic and uncontrollable threats, and their quality of life decreases (Hashemi & Eyni, 2020). Distress tolerance also determines a person's evaluation of a stressful event (Arfaee, Rashidi, & Tabesh, 2021) and hardship has a direct effect on the evaluation and coping with life events and adversities (Ekawati, Sugiharto & Mulawarman, 2019). The mediating role of hardiness in the relationship between stress tolerance and quality of life can probably be explained by increasing distress tolerance (Alimohammadi, Setodeh-asl & Karami, 2019). When a person does not have enough distress tolerance, hardiness can probably reduce the effects

of anxiety through challenge, commitment, and control, as well as prevent a decline in quality of life (Baratpour & Dasht Bozorgi, 2020).

Reviewing the evidence related to the research variables indicates that although some studies have been conducted on the relationship between quality of life and perceived stress, studies on the relationship between quality of life and tolerance of distress are rarely conducted in elderly communities. On the other hand, the mediating role of variables such as hardiness in the relationship between stress and quality of life has not been examined. No study was found on the mediating role of variables between distress tolerance and quality of life; therefore, this study aims to answer the question of whether the quality of life model based on perceived stress and distress tolerance does fit with the role of mediating hardiness?

Method

This applied study was descriptive-correlational applying the structural equation modeling. The statistical population of the present study included all male and female elderly in Ilam in 2020 (n=9496: 4437 males and 4637 females). The sample size using Power-G software was 384 people which was estimated at the level of 0.05. To complete the information about the number of elderly people, letters were sent to the Registry Office, Pension Fund, Retirement Center, Farzanegan Zande Del Zagros Foundation, Imam Khomeini Relief Committee, Welfare Organization, and Management and Planning Organization. Criteria for including samples in the study were the declaration of consent for participation in the research, literacy to answer the questionnaires, lack of cognitive impairment, no substance abuse, lack of crisis in the last six months such as the death of a loved one, and incurable disease or relocation in their family members. In addition, those who had completed the questionnaires incompletely were excluded from the study.

the purposive sampling method was applied. After explaining the goals of the study to the participants, the research questionnaires were completed by each participant in groups (n=5). During the time for completing the questionnaires, the researcher was present at the site and answered questions and ambiguities. After completing the questionnaire, one hour of free counseling services was provided to the participants to increase their quality of life. To attract the cooperation of 384 elderly people, 1014 people were contacted. Some people did not meet the criteria to participate in the study. Some questionnaires did not have the required validity. Of the 384 people in the study, 214 (55.3%) were male and 170 (44.7%) were female. The average age of the elderly in the study is about 68 years. 254 (66.1%) were married, 1 (0.3%) were single, 108 (28.1%) were widowed, and 21 (5.5%) were divorced. Among them, 220 people (57.3%) had primary education, 69 people (18.0%) had secondary education, 76 people (19.8%) had high school education, and 19 people (4.9%) hold a university degree. Therefore, most of the research samples had an elementary degree and the least had an academic degree. Of 266 cases, 69.3% had an illness and 30.7% were healthy.

Ethical statement

The current study was approved by the Research Committee and the Ethics Committee of the Islamic Azad University of Ilam. Participants were free to participate or leave the study. They were informed that the data will be kept confidential and their names will be anonymous.

Measure

Data collection tools in this study were as follows:

Demographic questionnaires: gender, marital status, age, education, and disease status.

The World Health Organization Quality of Life Scale (1996) includes 26-item with subscales of physical health, mental health, social relationships, and environmental health. the items are scored on a five-point Likert scale (4, 3, 2, 1, 0). the scores range from 0 to100. Liu et al. (2013) in China validated

this questionnaire among 1050 people. The results of the construct validity study confirmed the validity of the questionnaire by exploratory factor analysis. Reliability coefficients for the total score and components were calculated from 0.70 to 0.84 (Liu et al., 2013). In Iran, Nejat et al. (2006) evaluated its validation on 1167 people in Tehran. Participants were divided into two groups with chronic and non-chronic diseases. The reliability of the test-retest for the subscales of physical health, mental health, social relations, and environmental health were 0.77, 0.77, 0.75, and 0.84, respectively. Using Cronbach's alpha, the internal consistency for physical health, mental health, social relations, and environmental health was obtained at 0.72, 0.70, 0.72, and 0.72, respectively. In the present study, the reliability coefficient for the total score and subscales was between 0.76 and 0.94 (Nejat, Montazeri, Holakouie Naieni, Mohammad & Majdzadeh, 2006). The use of confirmatory factor analysis showed that this questionnaire has good structural validity.

The Perceived Stress Questionnaire (PSS-14) was developed by Cohen, Kamark, and Marmelstein (1994) and has 14 questions with two subscales of perceived self-efficacy and perceived helplessness. Each item is answered on a five-point Likert scale of zero (0), low (1), medium (2), high (3), and very high (4). In the study of Cohen et al. (1994), the score of internal consistency coefficients for the reliability of the perceived stress questionnaire was obtained between 0.84 to 0.86 and its correlation coefficient with cognitive symptoms was between 0.52 to 0.76 showing the validity of the questionnaire. Safaei and Shokri, during the analysis of the exploratory and confirmatory factor analysis, have confirmed the validity and reliability of this questionnaire. The reliability coefficient of the questionnaire was reported as 0.76. In the present study, the reliability coefficient for the total score and subscales was obtained between 00.91 and 0.94 (Safaei & Shokri, 2014). The use of confirmatory factor analysis showed that this questionnaire has good structural validity.

The Distress Tolerance Questionnaire was designed by Simmons and Gahar (2005) and includes 15 items and 4 subscales (regulation, tolerance, absorption, and evaluation). The items of this questionnaire are scored on a five-point Likert scale (1- Strongly Agree, 2- Slightly Agree, 3- Neither Agree nor Disagree, 4- Slightly Disagree, and 5- Strongly Disagree). High scores on this scale indicate high distress tolerance. Simmons and Gaher (2005) reported Cronbach's alpha coefficients for subscales 0.72, 0.82, 0.77, and 0.70, respectively, and for the whole scale 0.82. They also reported accepted and a good criterion and concurrent validity for this questionnaire (Simons & Gaher, 2005). In Iran, Alavi et al. (2011) examined the validity of the questionnaire and the results of reliability study showed high internal consistency coefficient (α = 0.71) and moderate reliability of subscales (tolerance 0.54, absorption 0.42, evaluation 0.56, and adjustment 0.58). In the present study, the reliability coefficient for the total score and subscales was between 0.85-and 0.94. The use of confirmatory factor analysis showed that this questionnaire has good structural validity.

The short-form hardiness scale was developed by Kobasa et al. in 1982 and includes 20 items with 3 subscales of commitment, control, and challenge. Each question has four options which are scores 1, 2, 3, and 4, respectively. Higher scores indicate greater hardiness. Kubasa and Madi confirmed the appropriate construct validity of this questionnaire. Based on the principal component analysis and varimax rotation, three factors were extracted after replication. These three factors explain 50.16% of the total variance of the test (Maddi & Kobasa, 1991). The study of Zare and Aminpour in Iran also showed the appropriate internal consistency of this questionnaire. They estimated the Cronbach's alpha coefficient at 0.84 for control, 0.82 for combat, and 0.75 for combat (Zare & Aminpour,2011).

Data Analysis

To analyze the collected data descriptive statistics

(frequency mean, standard deviation) were used. To test the hypotheses, first, the normality of the research variables was checked using the Kolmogorov-Smirnov test and then the Pearson correlation coefficient test and simple and multiple regression model, confirmatory factor analysis, path analysis, and structural equation modeling were used to analyze data through SPSS-25 and AMOS-25 software.

The results show the index in the structural model of the relationship between perceived stress and quality of life of the elderly in Ilam with the mediating role of hardiness for K2 is less than 4. In addition, the RMSEA index in the model is significant and lower than 0.08, which indicates a good fit for the model. Similarly, GFI, CFI, and NFI fitness measurement values in the structural model were acceptable and greater than the value of 0.90. Therefore, the structural model of the relationship between perceived stress and quality of life of the elderly in Ilam with the mediating role of hardiness with total, direct, and mediating (indirect) effects is supported by the research data at an appropriate level of the theories used.

Table (1): descriptive indexes of variable

variable	Mean	SD	skewness	kurtosis	Kolmogorov-Smirnov	P-value
Physical health	12.35	3.04	0.02	-0.70	1.33	0.06
Mental health	18.31	3.72	-0.07	-0.80	1.31	0.07
Social health	7.79	2.13	0.20	-0.64	1.28	0.07
Environmental health	14.36	3.13	0.049	-0.66	1.26	0.08
Quality of life	53.51	10.46	0.020	-0.84	0.93	0.34
Perceived efficacy	9.03	3.48	-0.12	-0.75	1.28	0.07
Perceived helplessness	7.78	2.85	0.025	-0.64	1.33	0.06
Perceived stress	16.91	5.78	0.23	0.65	1.28	0.07
Regulation	7.75	2.37	0.033	-0.82	1.18	0.12
Tolerance	7.61	2.27	0.094	-0.78	1.09	0.19
absorption	7.54	2.40	-0.07	-0.76	1.30	0.06
Evaluation	15.02	4.66	0.18	-0.83	1.13	0.15
Distress tolerance	15.94	3.61	0.046	-0.46	1.14	0.14
Commitment	12.48	3.13	0.22	-0.58	1.31	0.06
control	9.72	2.95	0.058	-0.46	1.23	0.09
Challenge	38.16	8.01	0.19	-0.31	1.33	0.06
Hardiness	2.43	0.73	0.065	-0.55	1.01	0.25

Table (2): Results of the structural model, total, direct, and mediating effects (indirect)

Model	χ^2	df	χ^2/df	*RMSEA*	GFI	CF	NFI
Total	69.93	24	2.91	0.071	0.088	0.863	0.899
Direct	62.790	26	2.41	0.06	0.089	0.89	0.80
indirect	56.17	25	2.24	0.066	0.089	0.90	0.89

Results

Table 1 shows descriptive indexes and normality of data distribution assumption.

Examination of the results of skewness, kurtosis, and Kolmogorov-Smirnov test showed that the data distribution is normal (Table 2).

In figure (1), the results of path coefficients and

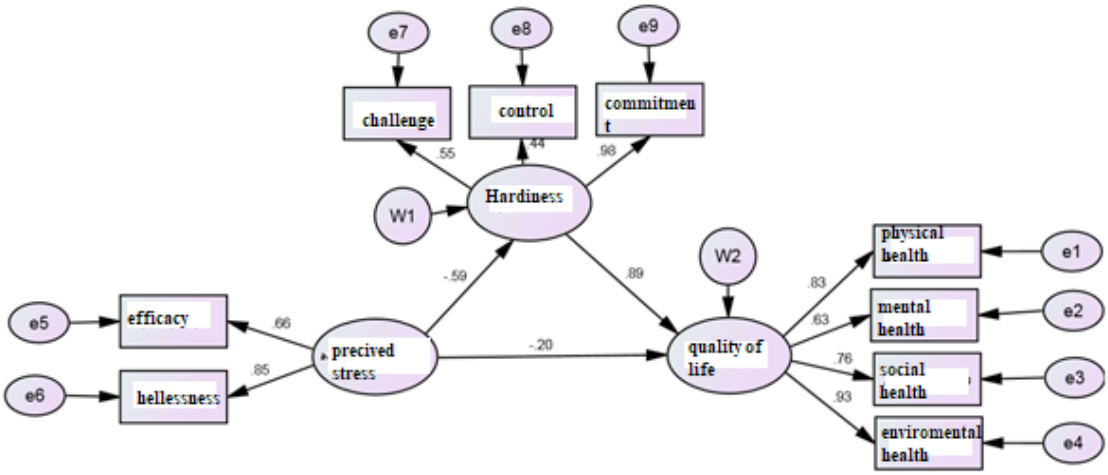

Figure (1): Results of path coefficients and factor load Structural model of the relationship between perceived stress and quality of life of the elderly in Ilam with a mediating role of hardiness with *total* effects in the standard estimation mode

factor load of the structural model of the relationship between perceived stress and quality of life of the elderly in Ilam with the mediating role of hardiness with total is displayed in standard estimation mode. Figure 1 shows all the factor loadings between the subscales and their associated variables for all the variables perceived stress, quality of life, and hardiness in each The three total, direct, and indirect (indirect) effects are greater than 0.60. As a result, the power of relationship and explanatory power and quality of life of the elderly in Ilam with the mediating role of hardiness with total desirable and appropriate effects have been.

Table (4) shows that the direct, indirect, and total effects in the structural model of the relationship between perceived stress and quality of life of the elderly in Ilam with the mediating role of hardiness are significant. As a result, according to the path coefficients in Table (4), the mediating role of

Table (3): The results of path coefficients, total, direct, and mediating (indirect) effects

Model	Path	β	C.R	P
total	Qol ≥ perceived stress	0.73	-5.43	***
	Hardiness to ≥ perceived stress	0.59	-9.21	***
	Qol to ≥hardiness`	0.89	18.73	***
Direct	Qol ≥ perceived stress	0.76	-10.37	***
indirect	hardiness ≥ perceived stress	0.68	-10.53	****
	Qol ≥ hardiness	1.05	24.16	****

Table (4). Results of direct, indirect, and total effects on the structural model

Path	Value	Direct effect	Indirect effect	Total effect
Independent-moderate-dependent				
hardiness≥ perceived stress ≥ quality of life	standard	-0.19	-0.53	-0.73
	sig	0.001	0.001	0.001
result			Partial Mediation	

for each variable with its subscale in the structural model of the relationship between perceived stress hardiness adds %-0.53 to the overall effects of the relationship between perceived stress and the quality

of life of the elderly in Ilam. As a result, the effect of the structural model of the relationship between perceived stress and quality of life of the elderly in Ilam with the presence of a mediator of hardiness is -0.73 compared to the direct effect of -0.99, which is considerable. Therefore, we can conclude that the mediating variable of hardiness in the relationship between perceived stress and quality of life of the elderly in Ilam is effective and has a partial effect (Partial Mediation). Thus, the mediating variable of hardiness can have a significant indirect effect on the relationship between perceived stress and the quality of life of the elderly in Ilam to the extent of -0.21, and the mediating role of hardiness in the relationship between perceived stress and the quality of life of the elderly in Ilam is effective and approved.

Discussion and conclusion

This study aimed to "explain the relationship between perceived stress and distress tolerance with the quality of life of the elderly in Ilam with the mediating role of hardiness."

According to the model path coefficients, the mediating role of hardiness adds 0.743 to the effects of the total relationship between perceived stress and distress tolerance on the quality of life of the elderly in Ilam. Therefore, it is concluded that the variable of hardiness mediates the relationship between perceived stress and distress tolerance. This finding is consistent with the findings of Rahmati and Abdollahi (2020). Feng, Vincent, Calbers, Hackman, et al. (2015) showed that stubbornness plays a mediating role between the quality of life and life stress. Ali Mohammadi et al. (2019) examined the model of distress tolerance and perceived stress to help better understand the quality of life of the elderly and showed the role of hardiness in the relationship between distress tolerance and quality of life of the elderly. In addition, the results of Yousefi Afrashteh, Mohammadi, and Tamjidi (2021) showed that the path coefficient of hardiness and tolerance of ambiguity with life expectancy was positive and significant. Ng and Lee (2020) also showed the moderation role of hardiness between loneliness and depression in the elderly.

Therefore, the result of testing the hypothesis shows the interaction between distress tolerance and hardiness. These two variables in parallel can also be protective against physical and psychological problems. People who can tolerate high levels of distress often use more adaptive coping strategies and show fewer emotional reactions. This trait can be seen in other ways in hardy people as well, so it seems that the sum of hardiness traits along with enduring distress can predict the quality of life more strongly. On the other hand, those who cannot bear the distress report less hope. Low tolerance for enduring problems and anxieties seems to reduce hope and consequently reduce the quality of life. People who feel that the situation is unbearable are more likely to be disappointed, and the combination of these two variables reduces the quality of life.

Hardiness increases a person's ability to control things and give meaning to challenging life events. When hardiness is low, a person is vulnerable to disease. due to physical and psychological problems, social problems arise and people have difficulty in playing their social roles, which together leads to a significant decline in quality of life. According to the obtained results, it is suggested researchers conduct in-depth behavioral studies to better understand the concept of quality of life and its components in nursing homes or other places and its effective results. Considering that quality of life is an important issue in the future, more and more research should be done on the variables involved in these areas, such as cultural, social, sports activities, etc. Longitudinal methods suggested studying factors related to the quality of life of the elderly. With the results of the present study and research on the quality of life and its relationship with other factors, comprehensive models can be proposed that help managers better understand the key factors. The present study showed that mediating factors can also have a positive effect

on the quality of life of the elderly, so for better efficiency of this method, it is necessary for the country's authorities to take care of this approach in providing the necessary facilities. It suggested that the necessary interventions to increase the quality of life of the elderly be designed and implemented taking into account psychological dimensions such as tolerance of anxiety and perceived stress.

In this study, the first limitation is related to the design of the study. To more accurately understand causal relationships, it is suggested to use a formative or longitudinal approach. This study was conducted only on the elderly of a city; therefore, generalizing the results to other groups of people and areas should be done with caution.

It was noted that in this study, the role of only a few factors was emphasized, but as mentioned earlier, personality, social, economic, and psychological factors also have a significant impact on the quality of life. Few studies conducted on perceived stress in the elderly. In addition, most studies have examined clinical problems such as anxiety and depression. Another limitation was that older people, despite being literate, were hardly able to understand some questions, which prolonged the data collection process. Many participants were excluded and in many cases, the researchers had to explain each question at length. Another limitation was that in the elderly group, due to the lack of patience and insufficient knowledge of field operations, the cooperation was low. The cognitive problems of the elderly were another limitation of the study, which led to the elimination and replacement of a significant number of participants.

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