Original Article

Predicting Life Quality Model Based on the Cognitive Status and the Social Capital Among Elderly Regarding the Resilience as the Mediating Role

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Abstract

Background: The quality of elderly people's life is one of the challenges of the 21th century. Therefore, determining factors that affect quality of life in elderly people is important. This study was designed to establish a life quality model among elderly.

Methods: In this study, a quality of life model was designed based on cognitive status and social capital with the mediating role of resilience among older adults. For this reason, 243 subjects over 60 years old living in Tehran were chosen through convenient sampling d in 2020-2021. The specified information was collected utilizing the World Health Organization Quality of Life (QOL) questionnaire to determine the quality of life, Onyx and Bullen's social capital scale to assess the social capital, Mini Mental State Examination (MMSE) to evaluate the cognitive impairment and Connor-Davidson resilience scale to assess the level of resilience. The obtained data were statistically analyzed by confirmatory factor analysis using AMOS software v24.

Results: Results showed a significant positive relationship between cognitive status and quality of life ($\beta=0.474$, $p<0.01$), between social capital and quality of life ($\beta=0.245$, $p<0.01$), and also between resilience and quality of life ($\beta=0.400$, $p<0.01$) among subjects. Results also confirmed the mediating role of resilience in the relationship among cognitive status, social capital, and quality of life ($\beta=0.102$, $p<0.01$ & $\beta=0.170$, $p<0.01$).

Conclusion: For the promotion of quality of life among subjects, certain interventions must be designed by policy makers to improve social capital, cognitive status, and resilience.

Keywords: Cognition, Mental status, Quality of life, Social capital

Introduction

Population aging phenomenon is happening in numerous nations around the world. Extending life expectancy and reduced birth rates resulted in an increase in the share of aging population in the last 50 years. It is assessed that by 2031, 25 to 30% of the population enter old ages in Iran (1). Older people seek not only a longer duration of life but also an improved quality of life (2). As characterized by World Health Organization (WHO), Quality of Life (QOL) is people's understanding of their possessions, social position, and their framework of values. It is related with their desires, norms, and feelings (3). QOL aspects cover diverse physical, mental, social, and environmental dimensions (4). It is evident that by aging, older adults become more susceptible to chronic illnesses, loneliness, isolation, and need of social support, all of which can diminish their QOL (5). Physical or mental health-related issues have been related with one's QOL around the world. One of the main mental health issues among the elderly that has been associated with risk of mortality and morbidity is depression (6,7). The loss of relatives, being away from children, less social communication, having chronic physical illnesses, using multiple drugs, and loss of cognitive functions have made the elderly apt to depression (8). Cognitive impairment is another problem of aging. Cognition is one of main components of self-autonomy among the elderly (9). Some studies showed a significant relationship between disability and the individual's mental health status, cognitive impairment, and depression (10,11). Therefore, it is crucial to understand the factors influencing health to improve QOL for the older adults (12). The QOL of elderly people ought to be surveyed comprehensively, not exclusively with respect to their physical condition, but with mental condition, social activities, and cognitive capacities (13). Studies have indicated that social status and social capital predict individuals' QOL (14,15). Also, studies in Iranian elderly population showed that there is a positive relationship between QOL and social capital and its dimensions (16). A type of capital accumulation that contributes to social solidarity, social devotion, self-confidence, and healthiness is called social capital (17). Being within the social systems and communicating with other individuals of the society indicate higher social capital among the elderly; moreover, physical wellbeing, mental wellbeing, and fulfillment of life are

other indicators of QOL (18).

Cognitive deficits such as deficits in memory, orientation, attention, language, and executive functions may negatively influence people's life on different aspects. Impaired verbal abilities may lead to communication difficulties which hinder a person's ability to maintain social roles at desirable levels. Attention deficits may result in physical impairments, self-reported disability, and poor functioning of activities in daily living such as eating, bathing, and personal hygiene; deficits in attention, memory, and executive functions may be linked with the mechanisms of pain chronicity and awareness of cognitive dysfunction may cause depression (19). Studies indicated that in Iranian elderly population, there is a positive significant relationship between cognitive status and QOL (20,21).

Studies indicated that cognitive complaints were related to greater depression, more anxiety, higher perceived stress, lower general mental wellbeing, and relatively lower quality of life (22). A way to reduce levels of mental distress could be represented by the increase of resilience. Resilience is viewed as the ability to successfully manage the stress (23). A high degree of resilience contributes to increased perceived life quality at the physical and psychological levels, and at the same time, reduced anxiety and depressive symptoms (24).

Studies indicated that there is a significant positive relationship between resilience and QOL in Iranian elderly population (25). Longevity can be supported by resilience according to studies. Furthermore, high resilience in later life has been associated with positive health outcomes (26).

As our population grows older, the issue of improving the QOL of the elderly will become increasingly important. In this study, an attempt was made to investigate whether social capital, cognitive status, or resilience predict the elderly' quality of life. Moreover, an investigation on whether resilience mediates the relationship between the cognitive status and the elderly's quality of life and whether resilience mediates the relationship between the social capital and the elderly's quality of life was carried out.

Materials and Methods
Participants

To access the needed sample size, considering the eligibility criteria, 267 elderly from community

centers were selected by convenient sampling from September 1st to February 31st, 2020-2021 in Tehran. Finally, 243 eligible participants were enrolled in the study and filled the questionnaires. The study population included all old people who live in Tehran. The inclusion criteria were the age of 60 years or above and being able to read and write. Participants who had previously been diagnosed for any dementia type, who had a major psychiatric disorder, and who had been suffered a chronic disease during the past 6 months were excluded from the study.

After the application of the Mini Mental State Examination (MMSE), the participants were asked to fill out the WHOQOL-BREF, Onyx and Bullen's social capital scale, and Connor-Davidson resilience scale.

The clinical characteristics of the participants such as age, marital status, and educational status were recorded. table 1 illustrates the detailed data. The participants were informed about the scope and purpose of the study and the confidentiality of their information before data collection. Compliance with the ethical principles of "informed consent", and "respect for autonomy" was ensured. The participants were encouraged to complete the questionnaires and scales in a private room, and the interviews lasted about 30-35 minutes.

Instruments
WHOQOL-BREF questionnaire
This questionnaire includes 26 items covering 4 domains of physical health, psychological health, social relation, and environment. The answers to the items were scored in a 5point Likert scale. After the raw scores were calculated in 4 domains, the total score was turned into 100 scoring formats. Research on psychometric characteristics of short form of WHOQOL questionnaire revealed that validity of the test was between 0.46 and 0.67, and reliability was between 0.73 and 0.89 (27). In Iran, the validity of the test was between 0.45 and 0.83, and reliability of this questionnaire was 0.88 (28). The reliability of the current questionnaire and its domains, using Cronbach's alpha, was calculated to be over 0.80 in this study.

Mini Mental State Examination (MMSE)
This is a frequently used and easily applicable test developed by Folstein (1975), to determine a patient's degree of cognitive disorder. According to the education levels of citizens, the threshold value was determined to be 23/24 points in screening for possible dementia. The validity of the MMSE has been reported between 0.5 and 0.6 and its reliability was 0.94 (29). In Iran, validity of the test was reported 0.84 and its reliability was 0.71 (30). The reliability of MMSE, using Cronbach's alpha, was calculated to be 0.87 in this study.

Onyx and Bullen's social capital scale
This scale has two main dimensions as cognitive and structural. The answers to the items in this scale were developed and scored in a 5 point Likert scale ranging from 1 (very low) to 5 (very high), and the minimum and maximum score among 36 items was 36 and 180, respectively. The score range of 36–64 indicated very low, 65–96 low, 97–122 average, 123–151 high, and 152–180 very high social capital. The reliability and validity of Onyx and Bullen's scale have been reported 0.84 and 0.78 (31). In Iran, the psychometric properties (Construct, concurrent and face validities, internal consistency, and test–retest reliability) of the Persian version of Onyx and Bullen's social capital scale were calculated, and the results showed validity and reliability of 0.96 and 0.70, respectively (32). The internal consistency of this scale in this study was calculated as 0.83 in cognitive dimension and 0.65 in structural dimension by Cronbach's alpha.

The ConnorDavidson resilience scale
This scale can efficiently separate the resilient individuals from the nonresilient ones and can be used in research and clinical situations. The answers to the items in this part were scored in a 4point Likert scale ranging from 0 (Absolutely incorrect) to 4 (Always correct), and minimum and maximum scores among 25 items were 0 and 100, respectively. The cutoff point for this scale is 50, in which the score above 50 indicates resilient individuals, and the score higher than 50, demonstrates higher resilience level and vice versa. Connor and Davidson reported Cronbach's alpha of the resilience scale as 0.89 and also reliability coefficient yielded by test–retest in a 4week interval was 0.87 (33). In Iranian population, the scale's psychometric properties have been tested

and approved (34). The internal consistency of the resilience scale in the present research was estimated as 0.86 by Cronbach' alpha.

This study was confirmed by the Research Ethics Board at Karaj Islamic Azad University (Ethics code: IR.IAU.K.REC.1399.034 in 2020). All participants were asked to sign consent forms.

Statistical analyses

Descriptive statistics were computed for the variables including means, standard deviations, kurtosis, and skewness. A two-step process was adopted to test the hypothesized model. First, confirmatory factor analysis was implemented to create a measurement model with an adequate fit to the data and next the Structural Equation Model (SEM) was established, after this phase was verified in the second step.

Results

Measurement model

table 2 shows that the cognitive dimension of social capital, at a significant level of 0.01, was positively correlated with the components of physical health and social relations regarding the quality of life. It reveals that it was also, at a significant level of 0.05, positively correlated with the components of mental health and environmental health. The structural dimension of social capital, in addition to the cognitive status were at a significance level of 0.01, positively correlated with the four components of quality of life. Excluding the relationship between the components of spiritual impacts and resilience and the components of environmental health and quality of life, the correlation coefficients of other components of resilience and the quality of life were, at the level of 0.01, positive and significant.

In the current study, the assumption of normality of data distribution was assessed through the analysis of the kurtosis and skewness values. Moreover, the assumption of alignment was examined using the Variance Inflation Factor (VIF) and the tolerance coefficient; the mentioned results are indicated in table 3.

The structural equation model

In order to evaluate the fitness of the measurement model with the collected data, the confirmatory factor analysis and the Maximum Likelihood (ML) estimation were applied through the AMOS software v24 (IBM, USA). table 4 shows the fit index of the measurement model.

After confirming that there was an acceptable fit of the measurement model with the collected data and ensuring about the power of markers in measuring the latent variables, the data were tested through using the structural equation modeling. In the structural model of the present study, it was assumed that cognitive status and social capital could predict the elderly' quality of life, both directly and through having resilience as a mediator. The structural model analysis and the results confirmed that all fit indices support the fit of the structural model with the collected data ($\chi2$=87.74, $\chi2$ /df=1.87, CFI=0.981, GFI=0.947, AGFI=0.912, and RMSEA=0.060). table 5 indicates the path coefficients between the variables in the structural model of the research. table 5 shows that the total path coefficient between the cognitive status and the quality of life is positive and significant at the level of 0.01 ($p<0.01$, β=0.474). Moreover, the coefficient of total path between the social capital and the quality of life was positive and significant at the level of 0.01 ($p<0.01$, β=0.245). The path coefficient between the resilience and the quality of life was also positive and significant at the level of 0.01 ($p<0.01$, β=0.400). The table also demonstrates that the indirect path coefficient between the cognitive status and the quality of life is positive and significant at the level of 0.01 ($p<0.01$, β=0.102). The indirect path coefficient between the social capital and the quality of life was also positive and significant at the level of 0.01 ($p<0.01$, β=0.170). Accordingly, it could be said that among the participants, the resilience variable mediates the relationship between the cognitive status and the social capital with the quality of life in a positive and meaningful way. Figure 1 reveals the structural model of research and explains the relationships between the cognitive status, social capital, and resilience with the quality of life among the senior citizens.

Discussion

The current study was planned to check the mediating role of resilience in making an association among variables of social capital, cognitive status, and QOL in

a sample of Iranian elderly population. The best model from this study supports the mediating role of resilience among social capital, cognitive status, and QOL. The results of our study indicate that individuals with higher levels of social capital, cognitive status, and resilience will experience better QOL. In terms of clinical interventions, the model highlights the significant role of support that older adults receive from social relationships. Elderly population's active participation in social activities in their communities can be promoted *via* specific initiatives geared toward the needs of old people. Our finding showed that social capital predicts QOL of elderly. This finding is in line with other previous studies which highlighted the relation between social capital and QOL (36-40). This finding is similar to evidence indicated by Alizadeh-Aghdam *et al* who found a significant positive relationship between social capital and the quality of life among the retirees. Consequently, social capital and its dimensions are good predictors for the quality of life among the elderly. According to QOL's theories, social variables, especially social capital, play a key role in QOL (16).

Social capital affects QOL by transferring health data, promoting health behaviors, and lowering stress levels (41,42). Cognitive dysfunction is a common problem among the elderly (43). The chance to enhance cognitive status has been proven within the model with increasing QOL. Globally, several studies indicated that there was a relationship between cognitive status and QOL and our finding is in line with them (43-47). This may be because people with better memory and other executive functions feel better about their psychological health (46). Findings suggest that older people who report cognitive complaints may also be experiencing problems in other areas of functioning, such as anxiety, depression, and activities of daily living (47).

Ghazanfari *et al* in their study showed that there was a positive correlation between cognitive status and quality of life in army retirees' community in Khorramabad. According to the results, cognitive status among the retirees can predict the quality of life, and our finding is similar to this study (20).

As proven by the literature, a high degree of resilience contributes to perceived life quality at the physical and psychological levels, and at a similar time, reduces anxiety and depressive symptoms. Given the above facts, less resilient elderly may be more prone to symptoms of depression, anxiety, and poor perception of QOL. Resilience may reduce the negative influence of life stress on physical, emotional, and functional well-being in the elderly (48). This finding has been affirmed in some studies (49,50). Talepasand in 2013 indicated that there was a significant positive correlation between QOL and resilience in Iranian elderly (51).

Additionally, the results may even have economic implications in term of reducing care costs and leading to fewer contacts between elderly population and general practitioners and hospitals (52).

There have been some limitations in the current study; first, the findings cannot be generalized to the population of the whole country as it is not possible to include all old people. Moreover, the participation of women was more in comparison to men in this study.

Conclusion

The current study indicated that cognitive status and social capital with the mediating role of resilience are significant in elderly's quality of life, and therefore the therapists and researchers are advised to take into account the role of the psychological and cognitive interventions in boosting the standard of life among senior citizens.

Future studies should examine the relationship between psychological health, cognitive status, and QOL from a longitudinal perspective. Moreover, people's resilience, social capital, and cognitive status can be analyzed before and after completing a specific intervention program.

Acknowledgements

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