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Predictive factors of quality of life among the elderly in Iran: Application of Andersen's behavioral model

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Abstract:

BACKGROUND: This study aimed to identify the quality of life (QoL) and its predictive factors based on the Andersen's behavioral model among the elderly in Iran.

MATERIALS AND METHODS: A quantitative cross-sectional study was conducted on 400 people aged 60+ resident in Zanjan, Iran, in 2019. Data were collected based on the Andersen's behavioral model constructs by the questionnaires. Path analysis was used to determine both direct and indirect effects of variables and also for estimating the values of coefficients in the underpinning linear model.

RESULTS: In this study, 50% of the participants were female, and 83% were married. The participant's QoL was 37.4 (9.8). The results confirmed that financial level and physical activity were the most significant predictor of the elder's QoL. Chronic diseases and activities of daily living as need factors affect the QoL of participant indirectly.

CONCLUSION: The results showed that the participant's QoL was at a moderate level. Utilizing of primary health-care services was the weakest predictors of QoL. Sex, marital status, and education level were not reliable predictors of QoL in elders. Other predisposing, enabling, and need factors should be investigated to find the main determinants to improve elder's QoL.

Keywords:

Andersen, health services accessibility, older adults, quality of life

Introduction

Aging is one of the most sensitive stages of life. Aging has a growing trend, which in the near future will account for a high percentage of the world's population.[1] According to the evidence, the world's population is aging. It is expected that the number of elderly people (60 years and older) in the world will reach more than 2 billion in 2050.[2] Iran's elderly population is growing rapidly, such that 20% of Iran's population will be old by the year 2050.[3] Aging could have a significant impact on the country's economic and social situation, and we will soon face with the challenge of an aging population.[4]

In the past, old age was considered to be the last stage of life and the period of the sickness, disability, and isolation. Hence, in the planning and policy-making, less attention was usually paid to older adult needs and wants. However, in the modern look, instead of focusing on the years that have passed, we focus on the rest of life. Therefore, in old age, one should enjoy his life.[5] That is why the healthy and active aging in the elderly has become one of the global concerns in recent years. A healthy and active elderly is a precious gem for the family, society, and the economy. Thus, investing on the health of the elderly will benefit all communities in the world.[3] Owing to the fact that people live longer, it is important to pay attention to the quality of life (QoL), even with chronic conditions and diseases in the elderly.[6] Therefore, one

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of the most important challenges for governments and policymakers is addressing the issue of aging and the QoL of the elderly.[7]

Qol is a broad concept which can affect a person's psychological and physical health, level of social relationships, and his or her independence.[8] Several factors can affect the QoL of the elderly, including poor social, economic, cultural, educational, and health-care conditions, and also insufficient social interactions.[9] In addition, older people may be at risk for social isolation and loneliness due to the changes in their roles, social relationships, and living environment.[6] Furthermore, chronic metabolic disorders and impaired sexual activity can contribute in the emotional disturbances in older. These problems have a negative impact on older people and can decline their QoL.[10] These complex conditions can lead to an increase in the demand for the use of health-care services.[11] Undoubtedly, the aim of life for the elderly is not only long life, but also their type and QoL is very important issue. Hence, for improving the elders QoL, the first requirement is comprehensive information about their QoL and its effective factors. Hence, numerous studies have been conducted to assess the QoL and related factors in the elderly in Iran.[1,7,10,12] So far, few studies have investigated Andersen's behavioral model by exploring how the predisposing, enabling, need factors, and health behavior interrelate with QoL as a health outcome in older adult in Iran.

In this study, Andersen's behavioral model has been employed to explore the factors associated with QoL among older adult as a key health outcome [Figure 1].[13] The model explains that how contextual and individual characteristics, which include predisposing, enabling, and need factors, influence health behaviors, and QoL.[14] Thus, predisposing (demographic), enabling (socioeconomic), and need (health care services) are conceptualized as factors which either hinder or enhance individual's health behaviors, most especially health-care utilization and subsequent other outcomes related to health and satisfaction such as QoL.[15] In this study, age and sex were considered as predisposing factors; also, education, financial level, family size, and marital status as enabling factors; and number of chronic conditions and activities of daily living (ADL) as the need factors which influence health behaviors and QoL [Figure 2]. Health behaviors include physical activity and health-care utilization which can impact on physical, mental, emotional, and social functioning. Finally, QoL as an outcome includes control, autonomy, pleasure, and self-realization. Therefore, this study was aimed to assess the QoL in elderly population-based on Andersen's behavioral model to determine the predictors that may influence the older adult QoL.

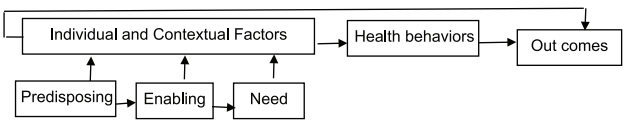

Figure 1: Conceptual model. Adapted from Andersen's behavioral model. Factors associated with quality of life in older adults in the Iran[13]

Materials and Methods

Research design

A quantitative cross-sectional study of 400 people aged 60+ years resident in Zanjan, Iran was conducted. The inclusion criteria were: Residents in Zanjan city who have been older adult age groups (60+); Living in different areas of Zanjan; Lack of mental and cognitive disorders (getting a score of 7 or more in a Persian version of the abbreviated mental test),[16] and both lack of hearing and speech disorders.

Sample size and sampling procedure

The sample size of this study was calculated using the Morgan table. Based on the population of the elderly covered by the Comprehensive Health Services Center (n = 37887), the sample size was estimated 380 people, which was increased to 400 people.

Based on the population of ≥60 years in each health center in Zanjan, the number of samples for each of them was determined. Then, participants were recruited from all health centers (n = 18 health center) by the convenience sampling technique.

Data collection instruments

For gathering the data, we identified measured indicators from the questionnaire based on the Andersen's behavioral model constructs. The first construct is predisposing factors included demographic variables, the corresponding measured variables of which are age (age 60–80), and sex of participants. The second construct is enabling resources, the corresponding measured variables of which are the number of people in the family (scores of 1–6 reflected the actual number, and 7 was used for seven or more people), marital status (widowed, divorced, separated, or never married), education (illiterate, elementary, middle, and high school or more), and poverty level. It was measured through the person's perception about his/her poverty of level (fairly well-off, income adequate to meet fundamental needs, difficult financial situation). The third construct is need, the corresponding measured variables of which are the number of chronic conditions and the ADL of participant. The chronic conditions were assessed based on the study of Baernholdt *et al*. Thirteen chronic conditions were evaluated and scored from 0 to 13.[17] ADL was assessed with the Persian version of ADL.[18] The ADl are the

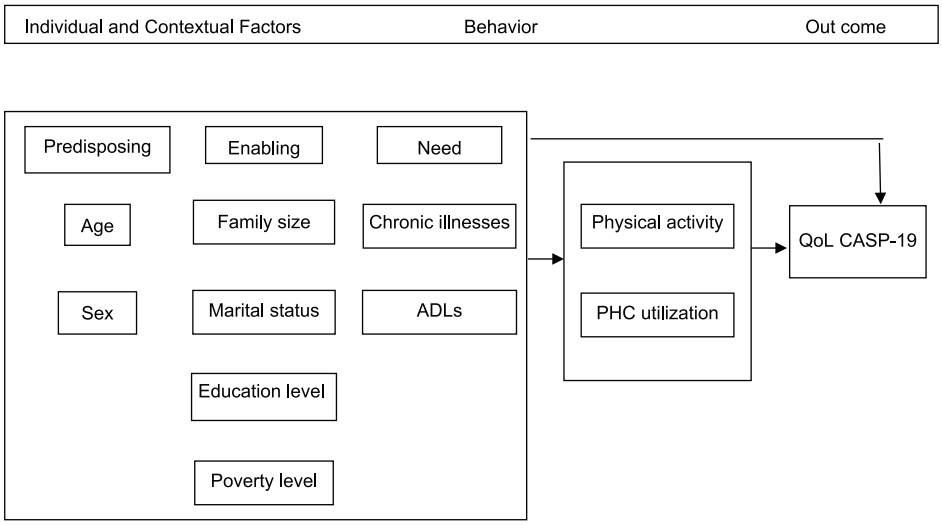

Figure 2: Conceptual model for Andersen's behavioral model

series of fundamental activities carried out by persons on a daily basis necessary for independent living. This tool evaluates ADL function with eight items. Items were scored from 1 to 4 (1 = no difficulty, 2 = some difficulty, 3 = much difficulty, and 4 = unable to do). Total score ranged from 16 to 64 and higher scores indicated lower ADL function.

Based on a previous research, this study also evaluated participant's physical activity and health-care utilization as a health behaviors' construct in the Andersen's behavioral model, which both are affected by age. Physical activity was assessed with this question: How much did you have physical activity per day on average? Ranging of the answers were 1–4 (sits during the day and does not walk that very much = 1 and does heavy work or carries heavy load = 4). Health-care utilization was considered as the number of times a participant had received health care in the last year from primary health care centers (no health care utilization = 0, one visit = 1, two to three visits = 2, four to nine visits = 3, ten to twelve visits = 4, and thirteen or more = 5).[17]

According to this model, the QoL of the participants was examined as an outcome. QoL was assessed by Persian version of CASP-19 scale.[19] This scale included 19 items with four domains (control, autonomy, self-realization, and pleasure). The response spectrum consists of four Likert type ranging from "often = 3" to "never = 0" and total range of scores is from 0 to 57; If participants received higher scores, their QoL would be considered better.[20]

Statistical analysis

Descriptive analysis was conducted using the SPSS software version 23 (IBM Corp., Armonk, NY, and USA). The normality of data was assessed by kurtosis and skewness.[21] Data were analyzed by path analysis using Amos 23. Path analysis was used to determine the direct and indirect effects of variables and to estimate the values of coefficients in the underpinning linear model. Chi-square, root mean square error of approximation (RMSEA), goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), incremental fit index (IFI), and Comparative Fit Index (CFI) were applied to check whether the model fitted adequately or not.[22]

Ethical consideration

The study, as part of a MS thesis in the field of health education and promotion, was confirmed by the Ethics Committee of the Research Department of Zanjan University of Medical Sciences (ID code: IR.ZUMS.REC.1398.147). After describing the aim of this study to all participants, we asked them to fill in a consent form before participating in the study.

Results

Characteristics of the study participants

In this study, 50% of the participants were female, 83% were married, and 53.7% were literate. The average age of the participant was 66.75 (5.59) years. Their number of people in family was an average of 3.07 (1.4) people. 55.3% of participants had expressed their income adequate to meet their fundamental needs. Total score of QoL of participants was 37.4 (9.8). The measured indicators of the participants' characteristics according to Andersen's behavioral model are indicated in Table 1.

Results of the model testing

The hypothesized model is given in Figure 2. The initial hypothesized model did not fit the data properly. Fit

indices of the model tested in the study were determined as (χ^2 = 171.60 (P < 0.001), df = 33, RMSEA = 0.103, CFI = 0.49, GFI = 0.92, and AGFI = 0.85), and they demonstrated unacceptable model fit. According to the fitting result of the initial model by Amos, sex, marital status, and education level were removed during the model revision process. The modified path model indicates a relatively good fit of the path model of role predisposing, enabling, need, health behaviors, and QoL among Iranian older [Table 2]. The path model presented in Figure 3 shows that age had indirect negative effects on QoL, and the size of family had direct negative effects on QoL. Level of poverty had direct positive effects on QoL and positive effects on PHC utilization. While, the number of diseases had direct negative effects on physical activity. Finally, ADLs had positive indirect effects on QoL. Of all the standardized total effects, the absolute value of level of poverty on QoL is the greatest (0.33), whereas PHC utilization had a smallest effect on QoL.

Discussion

The main aim of this study was to assess the QoL and its predictive factors based on the Andersen's behavioral model among the elderly in Iran. The participant's QoL was at moderate level, because the mean (standard deviation) QoL score was found 37.4 (9.8) in a range of 0–57, which is consistent with other studies conducted in Iran[19] and other countries.[23,24] According to the Anderson's behavioral model, the QoL of the participant is related to the various factors. The results showed that age as a predisposing factor had an indirect and negative effect on the QoL of the elderly. In this way, age can affect the QoL through its negative relationship with the daily activities of the elderly. This result is consistent with other studies.[25,26] Such as Masoumi *et al*. which demonstrated that ADL has correlation with age of participant. So that, with increasing age, the degree of independence of the individual is reduced.[27]

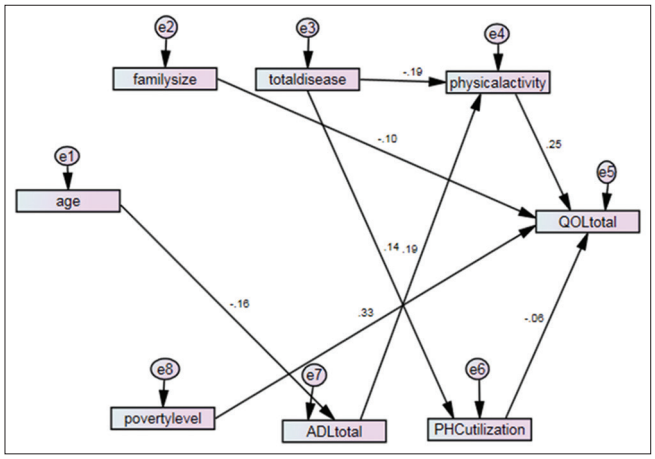

Figure 3: Path analysis results of the modified model

The ability to perform daily activities reflects an important aspect of functional independence in the elderly. Decreased physical function, which is associated with loss of independence in the elderly, is a major public health problem.[28] On the other hand, feeling

Table 1: Measured variables according to Andersen's behavioral model used in the analysis (*n*=400)

Variable	*n*/mean	Percentage/SD
Predisposing factors		
Sex		
Male	200	50
Female	200	50
Age		
60-64	176	44
65-69	116	29
70-74	50	12.5
75-79	51	12.8
80	7	1.8
Enabling resources		
Number of people in family (family size)	3.07	1.4
Marital status		
Married	333	83.3
Widowed	65	16.3
Divorced	2	0.5
Education level		
Illiterate	185	46.3
Elementary	125	31.3
Middle school	40	10
High school or more	50	12.5
Poverty level		
Fairly well-off	85	21.3
Income adequate to meet fundamental needs	221	55.3
Difficult financial situation	94	23.5
Need		
Number of chronic illnesses	1.21	1.01
ADLs	15.88	0.66
Health behaviors		
Physical activity	1.82	0.64
Primary health care utilization	1.87	1.11
Quality of life		
Total score CASP-19	37.4	9.8
Control domain	11.3	3.5
Autonomy domain	9.7	3.06
Self-realisation domain	7.6	2.7
Pleasure domain	7.8	2.8

SD=Standard deviation, ADLs=Activities of daily living

Table 2: Fit index results for the path model

Model	χ^2	χ^2/df	CFI	GFI	IFI	RMSEA
Optimal model	19.214	1.011	0.99	0.98	0.99	0.005

df=Degrees of freedom, CFI=Comparative fit index, GFI=Goodness of fit index, IFI=Incremental fit index, RMSEA=Root mean square error of approximation

uncomfortable in daily life by the elderly with lower ADL ability level was reported. This will reduce the QoL and increase health costs in the elderly.[29,30] The results show that ADLs, as a need factor, had positive indirect effects on QoL through the impact on the participant's physical activity level as a health behavior factor. Therefore, older people who do their daily activities without being dependent on others also have more physical activity. It was proven that there is a direct relationship between physical activity and daily living activities.[31] On the other hand, studies have shown that physical activity is related to QoL in the elderly,[32,33] and it is effective and improves QoL in elderly even those who are ill.[34]

Our finding indicates that chronic disease, as a need factor, has a negative indirect effect on QoL through physical activity. The observed relationship between physical activity and chronic diseases is in line with previous studies, which show a lower rate of physical activity in people with chronic diseases.[35-37] People with chronic illness are less likely to be physically active, which leads to loss of functional capacity, and further reduction in the ability to perform physical activity and exercise.[38]

However, according to the findings, chronic disease is directly related to the behavior of using primary health-care services. Furthermore, as the number of chronic diseases increases in participants, they are increasingly use health services. The results of the study are consistent with previous studies. The use of health care, outpatient services, and general practitioner's counseling increase with the number of illnesses and medications in the elderly.[39-41]

The use of primary health-care services, as a behavior in the Anderson behavioral model, is also negatively related to QoL in participants. Some studies have shown a negative association between health-care services utilizing and QoL in the elderly with specific chronic diseases as well as higher utilization of health-care services, curative services, and hospitalization corresponds with lower QoL levels.[42,43] Other study suggests that being in contact with the physician for preventive services and annual medical checkups may be a factor in keeping better among elderly.[44]

We received family size as an enabling factor which has a direct negative effect on QoL in participant. In other words, increasing family members is associated with poor QoL in the elderly. This agrees with Yazdanpour 's findings which concluded that the large number family member is associated with poor QoL for the elderly.[45] While, it is assumed that the elderly who have more children and family members, will have a better QoL due to strong support networks. Maybe we can assume that as the number of family member's increases, the elderly faces with unmet needs as well as economic and financial problems in the family. Hence, all of these issues can negatively affect their QoL.

On the other hand, financial level of the family is positively and directly related to the QoL of the participant. High-income elderly has reported better QoL. The results of the present study are consistent with the findings of Conde-Sala *et al*. They also reported that QoL was positively related to income and financial status of the elderly. Older people who reported poor financial income also had earned lower QoL.[32]

Strengths and limitations

This is the first study which has examined the QoL in Iranian, and correlates factors by Andersen's behavioral model framework. On the other hand, QoL was assessed with CASP scale which is new measure specifically assesses the QoL of the elderly. In this tool, QoL is defined as "the degree to which human needs are satisfied." This scale developed based on the theory of need satisfaction. Due to the lack of similar studies in this field, this research can be considered as a suitable guideline and a basis for future studies. However, this study had some limitations. First, all data were gathered with self-reported scales, which might led to under reporting or over reporting of behaviors in findings. Furthermore, in the assessment of health-care utilization, only the use of primary health-care centers has been evaluated, but using of hospital services has not been evaluated, which can affect the results of the study. On the other hand, in this study, only the elderly who had referred to the urban health-care centers were examined; therefore, it cannot be generalized to all the elderly in the city.

Conclusion

The findings reported here support Andersen's behavioral model of service use and health outcomes as applied to QoL in older adults. The results confirmed that poverty level and physical activity were the most significant predictor of the older's QoL. It is suggested that interventions aimed to improve the elders' physical activity as an important part of health life style, so lead to the increase of QoL among older people in the developing country like Iran.

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Conflicts of interest

There are no conflicts of interest.

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