Turkish Journal of Geriatrics
2017;20 (1):61-69

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RESEARCH

LIFE SATISFACTION AND QUALITY OF LIFE AMONG THE ELDERLY: MODERATING EFFECT OF ACTIVITIES OF DAILY LIVING

Abstract

Introduction: Increased human life expectancy has led to increases in the elderly population, both in developed and developing countries. Consequently, maintaining and raising the elderly's quality of life has become an important issue. Most studies on aging have found that a person's life satisfaction is strongly associated with their quality of life. This study investigated the moderating effect of activities of daily living on life satisfaction and quality of life.

Materials and Method: The sample comprised 360 elderly people (≥65 years old) who resided in Karabük City, Turkey, and visited the Republic of Turkey Ministry of Health Karabük 100. Yıl Family Health Center for treatment or checkup. Data were collected using the Satisfaction with Life Scale, the World Health Organization Quality of Life Assessment—Old Version, the Instrumental Activities of Daily Living, and a demographic information form. To determine the factors that affect the elderly's quality of life, hierarchical multiple regression analysis was employed.

Results: As elderly individuals' levels of independently maintaining activities of daily living rise, the relationship between their satisfaction with life and quality of life grows stronger.

Conclusion: Life satisfaction positively predicted the elderly's quality of life, whereas activities of daily living did not. In addition, activities of daily living moderated the relationship between life satisfaction and quality of life.

Key Words: Aged; Life satisfaction; Quality of life; Instrumental activities of daily living.

ARAŞTIRMA

YAŞLI BİREYLERDE YAŞAM DOYUMU VE YAŞAM KALİTESİ: GÜNLÜK YAŞAM AKTİVİTELERİNİN DÜZENLEYİCİ ETKİSİ

Öz

Giriş: Beklenen yaşam süresinin uzaması hem gelişmiş hem de gelişmekte olan ülkelerde yaşlı nüfusun artmasına neden olmuştur. Yaşlı nüfusun artmasıyla birlikte, yaşam kalitesinin korunması ve yükseltilmesi önemli bir konu haline gelmiştir. Yaşlılıkla ilgili yapılan pek çok çalışmada bireylerin yaşam doyumları ile yaşam kaliteleri arasında güçlü bir ilişki olduğu saptanmıştır. Bu çalışmada da yaşam doyumu ve yaşam kalitesi arasındaki ilişkide günlük yaşam aktivitelerinin aracı etkisi incelenmiştir.

Gereç ve Yöntem: Araştırmanın örneklemini Karabük ilinde yaşayan yaşlılar oluşturmaktadır. Çalışma 65 ve üstü yaş grubunda olan, tedavi veya kontrol amacı ile "100. Yıl Aile Sağlık Merkezi'ne başvuran toplam 360 yaşlı birey ile yürütülmüştür. Veriler Yaşam Doyumu Ölçeği, Yaşlılar için Dünya Sağlık Örgütü Yaşam Modülü, Enstrümantal Günlük Yaşam Aktiviteleri ve demografik bilgi formu ile toplanmıştır. Yaşlı bireylerin yaşam kaliteleri üzerinde etkili olan faktörleri analiz etmek amacıyla "aşama sıralı regresyon" analizi uygulanmıştır.

Bulgular: Yaşlı bireylerin günlük yaşam aktivitelerini bağımsız sürdürme düzeyleri yükseldikçe, yaşam doyumu ve yaşam kaliteleri arasındaki ilişki de güçlenmektedir.

Sonuç: Çalışmada yaşam doyumu yaşlı bireylerin yaşam kaliteleri üzerinde pozitif bir etkiye sahip iken, günlük yaşam aktivitelerinin yaşam kalitesinin belirleyicisi olmadığı sonucuna ulaşılmıştır. Bununla birlikte günlük yaşam aktivitelerinin yaşam doyumu ve yaşam kalitesi arasındaki ilişkide aracı bir role sahip olduğu sonucuna ulaşılmıştır.

Anahtar Sözcükler: Yaşlı; Yaşam doyumu; Yaşam kalitesi; Enstrümantal günlük yaşam aktiviteleri.

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Received: 02/11/2016
Accepted: 08/02/2017

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INTRODUCTION

With the increasing population and lifespan of the elderly population, the concept of old age has been elevated in importance and quality of life has received more attention. Attention should be paid to not only extending the human lifespan but also raising quality of life (1).

Although studies have emphasized that quality of life, which has received much attention in recent years, is vital in all periods of life, it requires greater focus with regard to old age. This is because increased health problems, loss of roles and status, loneliness, reduced cognitive skills, retirement, disconnection from social life, and other factors considerably influence quality of life during this period (2).

Health is an important indicator of quality of life (3), particularly during old age. The ability to perform activities of daily living adequately in all circumstances is the most important health status indicating the quality of life level (4).

Aging is a chronic and universal process leading to diminished overall functioning. This process involves physical deterioration and deteriorating abilities and reflexes due to diminished regeneration in organs and accumulated wear. Consequently, the elderly cannot independently perform activities of daily life and self-care and require assistance, thereby negatively influencing their quality of life (5). Satisfaction with life, which refers to a subjective aspect of quality of life, is an important factor influencing the preservation of quality of life and is affected by activities of daily living (6). From a theoretical viewpoint, it is reasonable to assume that satisfaction with life decreases with activity limitations, thereby negatively affecting quality of life.

Considering the growth of the elderly population and its expected continuance into the next century, it is imperative to explore the effects of activities of daily living on satisfaction with life and quality of life. This will contribute to not only preserving or improving elderly individuals' quality of life but also formulating services and policies for them. In this regard, this study investigates the moderating effect of elderly individuals' activities of daily living on their satisfaction with life and quality of life.

MATERIALS AND METHOD

Sample

The study was conducted in the province of Karabük. In the year 2015, the number of people that aged 65 and older, and lived in the province of Karabük was approximately 7102. The researcher determined the sample size to be 257 participants using sample size formula, with a confidence level of 95%, 50% frequency for event and a confidence interval of 0.6. Calculation formulas were based on ratios or variance. However, there was no variance estimation regarding the current population thus, this study used ratio approach to maximize the sample size. In addition, to decrease sampling error and to take missing value situation under control, the researcher reached to 400 people (7). The participants to be included in the sample were selected from 100.Yıl District, where the residents were elderly individuals in general.

The study group consists of voluntary individuals aged ≥ 65 who visited the 100. Yıl Family Health Center for treatment or checkup. Data were collected via face-to-face interviews conducted between March 14 and May 25, 2016. All participants were informed of the purpose of the study and assured that their answers would be anonymously used for research purposes only. Individuals who did not consent to the interview or did not want to participate in the study were excluded. The research forms were filled in 30 to 60 minutes. Four hundred interviews were conducted. However, 40 research forms filled imperfectly or inadequately were excluded from the analysis; thus, 360 forms were included for the evaluation.

Ethics Statement

Before collecting data, research approval was obtained from the Ethics Committee of Karabük University Medical Faculty. The investigation conformed to the principles outlined in the Declaration of Helsinki. The researcher provided monitoring information to the 100. Yıl Family Health Center.

Instruments

The research data were collected via a measurement tool comprising two parts: first, a demographic information form and, second, the Satisfaction with Life Scale (SWLS), the World Health Organization Quality of Life Assessment (WHOQOL-OLD), and the Instrumental Activities of Daily Living (IADL).

Demographic Form: The demographic form comprised demographic questions designed to obtain information about the elderly individuals participating in the study (gender, age, marital status, monthly income, perceived adequacy of income, educational level, and physical health status).

The Satisfaction with Life Scale (SWLS): The SWLS was developed by Diener, Emmons, Larsen, and Griffin to measure the satisfaction level individuals felt regarding the quality of their lives as a whole (8). The SWLS comprises five items. Responses are given on a seven-point Likert scale ranging from "1=certainly disagree" to "7=certainly agree". The total score ranges from 7 to 35 and a high score indicates high life satisfaction. The reliability and validity study conducted with the SWLS has a high coefficient (0.87), and the two-month test–retest stability coefficient is 0.82. The scale was translated into Turkish by Köker in 1991, and its internal consistency is 0.85 (9). Afterwards; Durak, Şenol-Durak, and Gençöz conducted a study with a sample that included elderly individuals, performed confirmatory factor analysis, and determined that the scale met the one-factor goodness of fit index criteria. The Cronbach's alpha coefficient of the scale was calculated to be 0.89 (10). In this study, internal consistency of the scale was 0.88.

World Health Organization Quality of Life Assessment (WHOQOL-OLD): The World Health Organization developed two quality of life instruments: The WHOQOL-100 and the WHOQOL-BREF. The WHOQOL-100 was developed to examine individuals' perceptions of life through a multidimensional and multicultural approach (11). The WHOQOL-BREF is a short version of the WHOQOL-100. The WHOQOL-OLD was designed as an additional module for use with elderly samples. The WHOQOL-OLD instrument is recorded on a five–point Likert scale ranging from 1 to 5. For each instrument, the lowest and highest scores are 4 and 20, respectively. Higher scores indicate greater quality of life. The WHOQOL-OLD comprises 24 items and a six-facet module for assessing quality of life in older adults. These facets include the following (with Cronbach's alpha values for each within parentheses): Sensory Abilities (0.81); Autonomy (0.72); Past, Present, and Future Activities (0.77); Social Participation (0.86); Death and Dying (0.82); and Intimacy (0.80). The instrument demonstrates good internal consistency (12).

The WHOQOL-OLD was adapted for Turkey by Eser et al. and has psychometric properties similar to the original. This modified instrument demonstrates an internal consistency of 0.85 and the subscales internal consistency was ranges between 0.68 and 0.88 (13).

Instrumental Activities of Daily Living (IADL): The IADL, developed by Lawton and Brody, is measured with an eight-item form (14). The items assess adaptive functioning versus disability in areas important in independent living, including using the telephone, shopping, preparing food, housekeeping, doing laundry, traveling away from home, taking medications properly, and handling personal finances. The most common method is to score the independent activities performed by the individual as 3, the assisted activities as 2, and the activities that the individual cannot perform at all as 1. According to IADL, the individuals having scores between 0 and 8 are evaluated as dependent, while those with scores between 9 and 16 are evaluated as half-dependent, and those having scores between 17 and 24 are evaluated as independent (14, 15).

The IADL was translated into Turkish by the researchers of this study. Principle component analysis (PCA) was implemented on the scale used in order to measure IADL. The results of PCA of the IADL the scale was found to have two factors structure that had an eigenvalue of above 1 and that explained 57.85% of the total variance. This rate of variance explained by two factors was out on acceptable level. Factor 1 has an eigenvalue of 4.56 and explained of variance 43.60%, 5 items are grouped together under the head of this factor. The factor loading of 5 items in the Factor 1 vary between 0.58 to 0.78. Factor 2 explained 14.25% of the total variance and had an eigenvalue of 1.14. Items (3 items) that indicated on Factor 2 with loadings between 0.70 and 0.84.

The researchers made a general calculation of the Cronbach's alpha internal consistency coefficient for the entire scale, and found it to be 0.88. For the two factors included in the scale, the Cronbach's alpha internal consistency coefficients were 0.74 (Factor 1), and 0.75 (Factor 2). The researchers determined that the Turkish translation of IADL scale had sufficient validity and reliability.

Data Analysis

To analyze the data obtained in the study, descriptive statistics (number and percentage distribution, means, standard deviations) were calculated first. Validity and reliability analyses were conducted using the independent (Satisfaction with Life—SWLS), dependent (Quality of Life-WHOQO-OLD), and moderator variables (Instrumental Activities of Daily Living—IADL). Spearman Correlation Analysis were performed to determine the level and direction of the relationship between the dependent and independent variables.

The method proposed by Aiken and West was then used for testing the mediating effect in order to answer the following question: "Do elderly people's activities of daily living have a moderating effect on the relationship between satisfaction with life and quality of life?" (16).

To prevent a multicollinearity problem, means were subtracted from total scores, thereby centralizing the scores before the independent and moderator variables were subjected to regression analysis. Standard z-scores were used for diminishing the possible multicollinearity problem in the analyses. The unstandardized regression coefficients, means, and standard deviations of the independent and mediator variables and the unstandardized regression coefficients of the moderator variable were entered. Significant interactions were interpreted via a simple slope test (16).

The moderating effect of activities of daily living was tested through a range of hierarchical multiple regression analyses based on the steps for mediation and moderation indicated by Baron and Kenny (17).

After it was determined, through hierarchical multiple regression analysis, that activities of daily living have a moderating effect on the relationship between elderly people's satisfaction with life and quality of life, the graph presented by Aiken and West was drawn (16).

RESULTS

Table 1 summarizes demographic information of the elderly people. Of the 360 participants, 178 were female and 182 were male. Ages ranged from 65 to 96 years and the average age was 70.23 years (S: 6.84). The percentage of married females (53.4%) was higher than that of married males (25.8%). The average monthly income was 866,96±405,49 TL. Of the total participants, 46.9% perceived that their monthly income adequacy was unclear (don't know), 29.2% perceived that their monthly income was adequate, and 16.4% stated that their monthly income was inadequate. Nearly 34% had a primary school degree. However, the illiteracy rate was higher among female participants (44.4%) than male participants (11.5%).

Table 1. Demographic variables

Demographic Variables	Female (n=178)		Male (n=182)		Total (n=360)	
	F	%	F	%	F	%
Age (M: 70.23; S: 6.84)						
Less than 74 years	127	71.3	141	77.5	268	74.4
More than 75 years	51	28.7	41	22.5	92	25.6
Marital status						
Single (single, divorced, or widowed)	83	46.6	135	74.2	218	60.6
Married	95	53.4	47	25.8	142	39.4
Monthly income (TL) (M: 866,96; S: 405,49)						
750 TL and less	117	65.7	73	40.1	190	52.8
751–1.250 TL	44	24.7	84	46.2	128	35.5
More than 1.250TL	17	9.6	25	13.7	42	11.7
Perceived income (PI)						
Certainly bad	5	2.8	4	2.2	9	2.5
Bad	29	16.3	30	16.5	59	16.4
Don't know	85	47.8	84	46.2	169	46.9
Good	52	29.2	53	29.1	105	29.2
Certainly good	7	3.9	11	6.0	18	5.0
Education						
Illiterate	79	44.4	21	11.5	100	27.8
Literate	32	18.0	33	18.1	65	18.1
Primary school	50	28.1	71	39.0	121	33.6
Secondary school	10	5.6	25	13.8	35	9.7
High school	7	3.9	32	17.6	39	10.8
Physical health status (PHS)						
Certainly bad	7	3.9	1	.5	8	2.2
Bad	19	10.7	14	7.7	33	9.2
Don't know	103	57.9	80	44.0	183	50.8
Good	48	27.0	80	44.0	128	35.6
Certainly good	1	0.5	7	3.8	8	2.2

According to Table 2, there was a significant negative relationship between elderly individuals' perceived adequacy of income (r=-0.22; p<0.01), physical health status (r=-0.25; p<0.01) and quality of life whereas there were significant positive relationships between quality of life and the following variables: monthly income (r=0.19; p<0.01), educational level (r=0.13; p<0.05), life satisfaction (r=0.46; p<0.01), and activities of daily living (r=0.19; p<0.01).

Table 2. Means, standard deviations (sd), and Spearman correlations for measured variables

Variables	Mean (Esd)	1	2	3	4	5	7	8	9
1. Age	70.2 (6.8)	1,000							
2. Monthly income (TL)	866.96 (405.49)	-.18**	1.000						
3. Perceive income		.08	-.45**	1.000					
4. Education		-.36**	.41**	-.16**	1.000				
5. Physical health status		.26**	-.30**	.27**	-.33**	1.000			
6. SWLS[1]	20.7 (7.2)	-.09	.23**	-.41**	.18**	-.36**	1.000		
7. IADL[2]	5.8 (2.2)	-.42**	.31**	-.13*	.40**	-.44**	.30**	1.000	
8. WHOQOL-OLD	80.1 (11.3)	-.05*	.19**	-.22**	.13*	-.25**	.46**	.19**	1.000

** p<0.01;*p<0.05 [1] SWLS= The Satisfaction with Life Scale; [2] IADL= Instrumental Activities of Daily Living

Hierarchical multiple regression analysis was utilized to explore the moderating role of activities of daily living in the relationship between elderly individuals' level of satisfaction with life and quality of life. Satisfaction with life (SWLS) was taken as an independent variable, quality of life as a dependent variable (WHOQOL-OLD), and activities of daily living (IADL) as a moderating variable. Before hierarchical multiple regression analyses were conducted, the variables of satisfaction with life (independent variable) and activities of daily living (IADL) (moderator variable) were centralized as recommended by Aiken and West, and the interaction term was obtained by multiplying these two centralized terms (16).

While physical health status (don't know) (β=-0.20, p<0.05) and physical health status (certainly good) (β=-0.19, p<0.05) negatively predicted elderly individuals' quality of life (see Table 3), monthly income (β=0.19, p<0.05) positively predicted it. Demographic variables explained 18% of the quality of life result, independently of other variables (R=0.421, R^2=0.177, F=1.895, p<0.05). The centralized variables of satisfaction with life and activities of daily living, which were included in the second stage of the regression analysis, explained 37% of the total variance (R=0.611, R^2=0.373, F=4.502, p<0.001). The standardized regression coefficients (β) and t-test results concerning significance indicated a statistically significant relationship between satisfaction with life (β=0.56, p<0.001) and quality of life and a non-significant relationship between activities of daily living (β=-0.07, p>0.05) and quality of life.

The interaction of satisfaction with life and activities of daily living, which was included in the third stage of the regression analysis, yielded an increase of 3% in the adjusted R^2 value by raising it to 40%, leading to a significant increase (R=0.633, R^2=0.401, F=4.728, p<0.001) (Table 3). This indicates that the effect of satisfaction with life on quality of life varied depending on activities of daily living. This relationship is depicted with a linear regression curve in Figure 1.

Table 3. Hierarchical multiple regression analysis of SWLS and WHOQOL-OLD as a moderator IADL

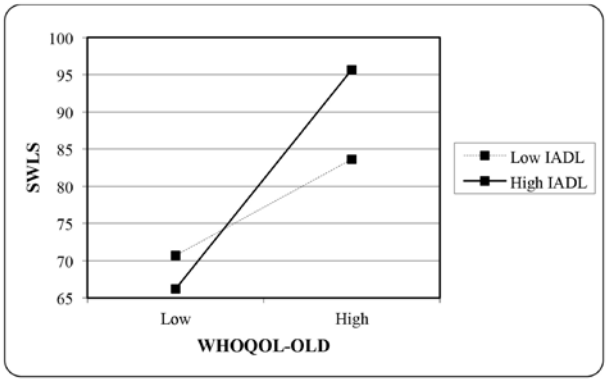
MODEL		B	Beta	t	Sig.	R	R^2	R^2 Adj.	F
1						.42	.18	.09	1.895*
	Age	-0.32	-0.14	-1.560	.121				
	Monthly income	0.01	0.19	2.006	.047*				
	Education Literate	1.81	0.07	.723	.471				
	Education Primary school	0.20	0.01	.079	.937				
	Education Secondary school	1.85	0.03	.348	.728				
	Education High school	7.60	0.15	1.726	.087				
	PHS – Certainly bad	2.27	0.02	.235	.814				
	PHS – Don't know	-4.59	-0.20	-1.993	.048*				
	PHS – Good	-0.79	-0.03	-.229	.819				
	PHS – Certainly good	-11.61	-0.19	-2.116	.036*				
	PI – Certainly bad	-0.87	-0.02	-.157	.875				
	PI – Bad	4.01	0.15	1.696	.092				
	PI – Good	0.61	0.02	.210	.834				
	PI – Certainly good	4.62	0.08	.954	.342				
2						.61	.37	.29	4.502***
	SWLS[1]	0.89	0.56	6.061	.000***				
	IADL[2]	0.21	0.07	.708	.480				
3						.63	.40	.32	4.728***
	SWLS[1] × IADL[2]	0.07	0.20	2.368	.019				

*p<0.05;**p<0.01; ***p<0.001 [1] SWLS= The Satisfaction with Life Scale; [2] IADL= Instrumental Activities of Daily Living

To create regression curves demonstrating the interaction between the two variables in the analyses in which interaction was found to be significant, a regression equation of the dependent variable was computed on the independent variable, taking one standard deviation below the mean and one standard deviation above the mean as the high and low levels of the moderator variable, respectively (16). The means consequently obtained allowed a simple regression curve to be constructed.

According to the results of the simple slope test performed to interpret the interactions on the basis of the high (+1SS) and low (−1SS) activities of daily living, the relationship between quality of life and satisfaction with life was significant and positive for both high and low activities of daily living. When elderly individuals have a low level of satisfaction with life due to a low level of activities in daily living, they tend to have a low quality of life (see Figure 1).

Figure 1. Interaction effects of life satisfaction and activities of daily living on quality of life



DISCUSSION

Aging leads to clear deficiencies in individuals' physical, mental, and cognitive functions, limiting and even preventing their activities of daily living over the course of time. Such limitations lessen satisfaction with life (18) and quality of life (19). In this regard, the present study explored the effect of elderly individuals' activities of daily living on the relationship between quality of life and satisfaction with life, which involves both cognitive and physiological aspects of well-being.

The correlational analysis indicated that quality of life decreases with age but increases as monthly income, perceived adequacy of income, and educational level rise; physical health status improves; satisfaction with life increases; and the ability to maintain activities of daily living independently continues. This corroborates the viewpoints in the literature (19-21).

According to the study's results, elderly individuals' activities of daily living play a moderating role in the relationship between satisfaction with life and quality of life. The mediating effect of the ability to maintain activities of daily living independently of the relationship between elderly individuals' satisfaction with life and quality of life was found to be significant at both low and high levels. Chen also found out that individuals' satisfaction with life lessens as their levels of activity decrease after the age of 65 (20). Investigating the factors influencing elderly individuals' quality of life, Özyurt et al. found that requiring assistance for activities of daily living is a leading factor influencing quality of life (22). Accordingly, as elderly individuals' ability to maintain activities of daily living independently rises, the relationship between their satisfaction with life and quality of life grows stronger. This study result corroborates past studies (6,21,23-24).

With the increase in the elderly population, the maintenance and betterment of the elderly's quality of life is and will be a priority. Therefore, dependence should be minimized in activities of daily living, which considerably influences satisfaction with life and quality of life. To this end, elderly individuals should take protective measures against health problems and engage in efforts that improve their mental and physical functions.

The present study has some methodological limitations. The study sample only included elderly participants from Karabük, which limits the generalizability of the results. Data from different cities should be included in future research.

The results of this study help to further document the moderating effect of activities of daily living on life satisfaction and quality of life in a selected group of elderly Turkish people. This study's results also have significant implications for individuals, families, policymakers, and academics.

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