

Factors Influencing Quality of Life Elderly Who Live Alone, Depending on Gender

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성별에 따른 독거노인의 삶의 질에 영향을 주는 요인

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Abstract This study was conducted to investigate the factors affecting the quality of life of elderly who live alone according to gender. The participants in this study were 959 elderly living alone from a total of 22,948 individuals studied in the 2013 - 2015 Korean national health and nutrition examination survey. IBM SPSS 23.0 was used to analyze the data. There were significant differences between the two groups in age, level of education, and amount of calorie intake. Economic status, presence of arthritis, presence of restrict activity, subjective health status had an influence on quality of life in men with an explanatory power of 50.5% ($p < .001$). Presence of back pain, subjective health status, suicidal ideation had an influence on quality of life in women with an explanatory power of 41.4% ($p < .001$). Therefore, in order to improve the quality of life of elderly living alone, it is necessary to provide appropriate intervention depending on gender.

Key Words : Quality of life, Elderly, General characteristics, Physical factors, Psychological factors

요 약 본 연구는 성별에 따른 독거노인 삶의 질의 영향요인을 파악하고자 시행되었다. 2013-2015년 국민건강영양조사 대상자 22,948명 중 독거노인 959명 대상으로 하였다. IBM SPSS 23.0 프로그램을 이용하여 복합표본을 형성한 후 복합표본 통계로 자료를 분석하였다. 두 그룹 간 나이, 교육수준, 칼로리 섭취, 관절염유무, 무릎통증, 허리통증, 알코올섭취 빈도와 양, 흡연유무, 주관적 건강과 삶의 질에서 유의한 차이가 나타났다. 남성 독거노인 삶의 질의 유의한 영향요인은 경제상태, 관절염유무, 활동제한, 주관적 건강이었고 이들의 설명력은 50.5%이었다($p < .001$). 여성 독거노인 삶의 질의 유의한 영향요인은 허리통증, 주관적 건강, 자살생각이었고 이들의 설명력은 41.4%이었다($p < .001$). 그러므로 독거노인의 삶의 질을 향상시키기 위해서는 성별에 따른 적절한 중재를 제공할 필요가 있다.

주제어 : 삶의 질, 노인, 일반적 특성, 신체적 특성, 정서적 특성

1. Introduction

The number of elderly in Korea increased from 5.5 million in 2010 (11.0% of total population) to 7.1 million in 2017 (14.0% of total population); the number of elderly who live alone increased from 1 million (19.4% of all elderly) to 1.5 million (21.2% of all elderly),

increasing 1.5 times over 7 years [1].

The number of households with elderly who live alone increased from approximately 1 million in 2010 to 1.3 million in 2016; the number of households with elderly aged over 85 increased from approximately 70,000 to 130,000, increasing almost twofold. In 2014, there were more than three times the number of elderly

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women who live alone (32.3%) compared to elderly men (10%) [2,3].

Elderly who live alone are the most underprivileged class as they face absolute poverty, loneliness, lack of nursing and management of chronic diseases, and lack of financial support from the family [4]. While the average prevalence rate of chronic diseases in elderly is 90.4%, this figure is 3.8% higher at 94.2% for elderly who live alone with the figure increasing with age [5]; the increase of ultra-aged elderly who live alone is a significant problem for these reasons. Moreover, elderly who live alone face more severe isolation and loneliness as they lack support from interpersonal relationships compared to elderly who live with their families. The resulting loneliness leads to stress associated with perceived self-value and health behaviors of the aged body, which, in turn, impacts psychological wellness, increasing the risk of suicide and having a significant influence on their quality of life through dissatisfaction with their daily lives [6,7]. In order to improve the quality of life of the elderly living alone, it is necessary to provide customized intervention by grasping the extent to which the physical and emotional characteristics affect the quality of life.

Increasing age leads to lower quality of life; women have a comparatively longer lifespan compared to men, indicating that they have lower quality of life compared to men [8]. As a result of previous research, even in the case of the elderly living alone, the quality of life of the elderly women is lower than the quality of life of the elderly men[5,9]. Therefore, it is necessary to investigate the factors influencing the quality of life of elderly living alone according to gender.

As a result of previous research, In the case of the elderly living alone, physical, psychological and social health are poorer than the elderly living with the family, which causes the quality of life to deteriorate [5].

When we look at the factors that affect the quality of life of the elderly living alone, in the case of the elderly living alone, the economic level is lower than

that of the elderly living in the family, This low level of economic activity can be a factor to decrease the quality of life by acting as a realistic constraint such as social life of elderly living alone or utilization of medical institutions [8]. In addition, the nutrient intake level of elderly was lower than other age groups, this may not only lead to disease outbreaks, but also increase mortality and complication rates and slow the rate of disease recovery [10,11]. Especially, the elderly living alone showed more than twice the health problem compared to the elderly living in family[12]. Therefore, it is necessary to have a nutritional management program that helps the elderly living alone to understand the eating patterns.

In the case of elderly women living alone, hypertension, diabetes, arthritis, circulatory system diseases, back pain and sciatica are more common than the male elderly, these physical illnesses lead to daily life and activity disorders as well as emotional disorders[10,12,13]. In fact, previous studies have shown that low self - rated health status, severe depression, and stress of elderly living alone are the factors that decrease the quality of life[3,14,15].

Although there are many studies on the factors affecting the quality of life of the elderly, it is difficult to find out the study on the various physical and emotional influences on the quality of life of the elderly living alone according to gender. In addition, this study is meaningful because it can be extended to the whole country, not limited to one region, using the results of the National Health and Nutrition Survey for all citizens.

This study reviewed gender-specific differences in elderly who live alone and would be useful in applying quality of life improvement programs according to gender.

Quality of life in elderly can be defined as happiness, values, and self-worth [8]; improving quality of life equates to improving happiness and self-worth, seeking meaning in life. Therefore, a diverse range of intervention is required to improve quality of life in

elderly who live alone, who tend to be more depressed and experience more losses in the meaning of their lives compared to elderly who live with their families. For effective operations of such intervention programs, it is important to identify the factors influencing the quality of life of elderly who live alone and the application of individualized intervention strategies that reflect these factors. This study was conducted to identify the factors influencing quality of life in elderly who live alone that can be used in the composition and operation of intervention programs to improve quality of life for such elderly.

2. Method

2.1 Research design

This study is a descriptive survey involving a secondary analysis of the 2013-2015 Korean national health and nutrition examination survey, which is the 6th issue to compare the gender-specific factors influencing quality of life in elderly who live alone.

2.2 Research participants

The participants in this study were 959 elderly men and women living alone from a total of 22,948 individuals studied in the 2013-2015 Korean national health and nutrition examination survey. The participants in the Korean national health and nutrition examination survey are 3,840 households with individuals for over a year that have been sampled from 192 research regions across the country. The sample selection involves the assignment of research regions according to administrative regions (metropolis, province), regions (dong, eup, and myeon), and housing types (standard houses and apartments); the sample extraction tool of the 6th survey (2013-2015) utilized the 2010 housing and population survey.

The Korean national health and nutrition examination survey was conducted after the approval of the institutional review board of Statistics Korea and

Korea Centers for Disease Control and Prevention. The participants were asked to fill out a form indicating their agreement to participate prior to conducting the survey.

2.3 Research method

The 2015 Korean national health and nutrition examination survey, which is the 6th survey was conducted from January to December 2013-2015.

The survey is directly carried out by the health and nutrition departments of the KCDC with research support from the provinces and cities. The individual provinces and cities indicate the seal of the provinces' and cities' governors on the notifications for selection to the selected participants, and send the survey to the health centers of the research regions. The dong, eup, and myeon offices receive requests to cooperate from the health centers, providing the list of individuals and maps of the research regions; other cooperation is provided for the fulfillment of the survey, such as providing sites for research and encouraging the participants to participate.

The participants were asked to visit the mobile testing vehicles, parked in a pre-selected location, and conducted their check-up and health surveys; the time taken was between 1.5 and 2 hours for adults aged over 19 years. Within a week of completing the checkups and the health surveys, the nutrition research team visited the households of the participants, conducting research on the frequency of food intake and dietary habits. The survey results were mailed to the participants within 3 weeks.

2.4 Research variables

The Korean national health and nutrition examination survey is composed of a check-up, health survey, and nutritional survey and is a legal survey for the purposes of producing statistics with reliability and national level representativeness on health, health-related perceptions and behaviors, and food and nutritional intake. Particularly, the statistics from the

surveys are used in objective-setting and as evaluation indicators of the Health Plan, and are used as basic data in developing health improvement programs and setting and evaluation of public health policies.

- The general characteristics included age, economic status, level of education, presence of economic activity, frequency of breakfasts, frequency of lunches, frequency of dinners, and amount of calorie intake.

- Physical factors included the presence of hypertension, diabetes, arthritis, stroke, angina, knee pain, and back pain alcohol consumption; alcohol consumption frequency; amount of alcohol intake; sleeping duration; smoking; number of cigarettes smoked; obesity; and movement restriction. The alcohol consumption frequency was divided into “four times or less per month” and “more than twice per week,” and the amount of alcohol intake was divided into “two drinks or less” and “three drinks or more.” The number of cigarettes smoked was divided into “10 cigarettes or less” and “11 cigarettes or more.”

- Psychological factors included stress, subjective body image, subjective health, suicidal ideation, feeling of depression, and quality of life. Stress was divided into “a lot of stress” and “little to no stress”; subjective

body image was divided into “thin,” “average,” and “overweight”; subjective health was divided into “good,” “average,” and “bad.” Quality of life was measured using the EQ-5D.

2.5 Data analysis method

IBM SPSS 23.0 was utilized with weighted-average values to create a complex sample planning file to be analyzed with the significance level set at .05.

The characteristics of elderly men and women living alone and the level of factors were analyzed using numbers and weighted percentages, and the inter-group comparison was done using χ^2/t -tests.

Factors influencing the quality of life of elderly men and women living alone were analyzed using linear regression analysis.

3. Results

3.1 General characteristics of two groups

There were significant differences between the two groups in age, level of education, and amount of calorie intake ($p < .001$). As shown in table 1, women were

Table 1. General Characteristics of Two Groups

Characteristics		Male(n=197)	Female(n=762)	$\chi^2(p)$
		n(weight %)	n(weight %)	
Age(yr)	65-74	116(57.9)	358(41.2)	-3.76(<.001)
	≥75	81(42.1)	404(58.8)	
Economic status	Low	91(47.5)	281(36.2)	-1.89(.059)
	Medium-low	54(26.8)	265(25.6)	
	≥Medium-high	52(25.7)	207(28.2)	
Education level	≤Elementary school	91(50.4)	564(85.0)	7.93(<.001)
	Middle school	26(16.4)	50(8.1)	
	≥High school	58(33.2)	50(7.0)	
Economic activity	Yes	57(30.7)	165(23.7)	-1.5(.123)
	No	118(69.3)	501(76.3)	
Frequency of breakfasts/week	5-7	158(86.3)	652(90.3)	1.37(.170)
	≤4	26(13.7)	69(9.7)	
Frequency of lunches/week	5-7	159(86.8)	618(86.0)	-0.25(.797)
	≤4	25(13.2)	103(14.0)	
Frequency of dinners/week	5-7	172(94.0)	671(92.6)	-0.64(.519)
	≤4	12(6.0)	50(7.4)	
Calory intake (Recommended amount)	Higher	82(42.6)	228(31.4)	7.49(<.001)
	lower	101(57.4)	496(68.6)	

older, and men had higher levels of education and higher calorie intake. However, there were no statistically significant differences in other characteristics.

3.2 Physical and psychological factors of two groups

As shown in table 2, Among the physical factors, there were significant differences in the presence of

arthritis, knee pain, and back pain as well as alcohol consumption, alcohol consumption frequency, alcohol consumption volume, smoking, and number of cigarettes smoked($p < .001$). Women had more frequent occurrences of arthritis, knee pain, and waist pain; men tended to drink more with higher frequency and amount of alcohol intake. Men tended to smoke more, and, among elderly who smoked, women smoked more.

Table 2. Physical and Psychological Factors of Two Groups

Characteristics		Male(n=197)		Female(n=762)		$\chi^2/t(p)$
		n(weight %)	M(SD)	n(weight %)	M(SD)	
Hypertension	Yes	84(48.7)		409(56.5)		3.17(.088)
	No	95(51.3)		279(43.5)		
Diabetes	Yes	34(20.5)		146(20.9)		0.01(.925)
	No	145(79.5)		539(79.1)		
Arthritis	Yes	32(18.1)		304(44.5)		46.50(<.001)
	No	147(81.9)		381(55.5)		
Stroke	Yes	13(8.7)		49(7.2)		0.39(.577)
	No	166(91.3)		638(92.8)		
Angina	Yes	11(7.5)		30(4.1)		3.0(.128)
	No	168(92.5)		656(95.9)		
Knee pain	Yes	42(23.0)		291(42.4)		21.83(<.001)
	No	136(77.0)		391(57.6)		
Back pain	Yes	51(27.5)		306(45.2)		17.12(<.001)
	No	127(72.5)		376(54.8)		
Alcohol consumption	Yes	79(44.9)		121(17.5)		68.85(<.001)
	No	98(55.1)		566(82.5)		
Frequency of alcohol consumption	≤4/month	93(60.6)		354(89.9)		55.04(<.001)
	≥2/week	61(39.4)		35(10.1)		
Amount of alcohol intake/glass	≤2	42(38.3)		181(78.1)		49.81(<.001)
	≥3	70(61.7)		46(21.9)		
Sleeping duration(hr)	≤6	92(47.7)		402(52.3)		1.19(.325)
	>6	105(52.3)		360(47.7)		
Smoking	Yes	54(28.6)		31(4.8)		309.0(<.001)
	No	122(71.4)		653(95.2)		
Number of cigarettes smoked	≤10	25(44.5)		8(21.9)		60.71(<.001)
	≥11	29(55.5)		25(78.1)		
Obesity	Yes	64(30.5)		470(61.8)		4.06(.155)
	No	132(69.5)		291(38.2)		
Movement restrict	Yes	34(21.4)		138(21.2)		0.48(.810)
	No	144(78.6)		539(78.8)		
Stress	Feeling a lot	34(20.4)		161(24.5)		-1.06(.289)
	A little feeling	141(79.6)		522(75.5)		
Subjective body image	Thin	51(29.9)		169(24.4)		-1.65(.099)
	Normal	81(46.2)		314(45.8)		
	overweight	45(23.9)		206(29.8)		
Subjective health	Good	43(23.8)		107(15.6)		-0.18(.005)
	Normal	78(44.1)		287(41.9)		
	Bad	59(32.1)		291(42.5)		
Suicidal ideation	Yes	19(13.5)		47(11.2)		-0.63(.529)
	No	108(86.5)		408(88.8)		
Feeling of depression	Yes	32(26.0)		106(22.5)		-0.67(.50)
	No	95(74.0)		349(77.5)		
Quality of life		.87(.178)		.80(.220)		3.86(<.001)

Table 3. Influencing factors on quality of life

Model			β	SE	t	p	R^2	F	p
Male	Economic status	Low	-.101	.052	-1.95	.063			
		Medium-low	-.137	.055	-2.48	.021			
		\geq Medium-high	1.0						
	Arthritis	Yes	.302	.074	4.11	<.001			
		No	1.0						
	Movement restrict	Yes	-.221	.091	-2.42	.024			
		No	1.0						
	Subjective health	Good	.183	.131	1.39	.199			
		Normal	.089	.025	-3.56	.007			
		Bad	1.0						
Female	Subjective health	Good	.106	.025	4.19	<.001	.414	8.70	<.001
		Normal	.080	.023	3.52	.001			
		Bad	1.0						
	Back pain	Yes	-.140	.019	-7.37	<.001			
		No	1.0						
	Suicidal ideation	Yes	-.092	.041	-2.21	.028			
		No	1.0						

Among the psychological factors, there were differences between the groups in terms of subjective health and quality of life ($p < .01$). Men tended to perceive their subjective health to be better, and quality of life was higher in men. There were no differences in the other factors between the two groups.

3.3 Factors influencing quality of life of two groups

In both two groups, regression analysis was performed with all general characteristics, physical and psychological characteristics as independent variables, and quality of life as dependent variables. In addition, discontinuous variables were changed to dummy variables.

The statistically significant variables are as follows. As shown in table 3, economic status, presence of arthritis, presence of restrict activity, subjective health status had an influence on quality of life in elderly men who live alone with an explanatory power of 50.5% ($F = 4.31, p < .001$).

Presence of back pain, subjective health status, suicidal ideation had an influence on quality of life in elderly women who live alone with an explanatory power of 41.4% ($F = 8.70, p < .001$).

4. Discussion

This study attempted to identify factors influencing quality of life depending on gender for elderly who live alone and to provide basic data for related nursing interventions.

For men, the factors that meaningfully influenced quality of life were economic status, presence of arthritis, presence of physical activity restrictions, and subjective health.

For economic status, quality of life was lower in individuals indicating "mid-high" or lower economic status; these results are in line with the study by Kim [8] that reported that elderly with weaker economic statuses face limitations in their social lives and usage of medical institutions, resulting in lower quality of life. elderly who live alone have weaker economic status than elderly who live with their families [15], resulting in lower quality of life and requiring appropriate social support. On the other hand, these results differed from those of studies reporting lower quality of life associated with better economic status [16]; as such, further studies that consider the relationship between other factors are required.

Arthritis is characterized by pain and limitations to physical activity in daily life; existing studies report that such pain and limitations to physical activity

negatively influence quality of life [17,18]. Moreover, Kim and Bae [19], who also utilized the data from the Korean national health and nutrition examination survey, reported that the presence of restrictions in physical activity was a significant factor influencing quality of life. This is partially in line with the findings of this study, which reported that the presence of arthritis and lack of restrictions in physical activity resulted in higher quality of life.

However, the participants in this study are residents of regional communities with less pronounced symptoms, resulting in different findings compared to existing studies. Moreover, according to Tollon et al. [20], physical activity is the most significant portion of self-management, which can be regarded as an important factor in quality of life. Therefore, elderly individuals with limitations to physical activity would have lower quality of life. It is important to develop appropriate treatments and nursing interventions that suit the causes of limitations to physical activity.

The results of this study indicated that the perceived subjective health was a significant factor influencing quality of life; these results are similar to those of a study by Moon [21], reporting that participants with average and positive outlook on subjective health had higher quality of life than those who had a negative outlook, and a study by Seo and Kim [22], who proposed that subjective health was the most significant factor influencing quality of life. Subjective health is a factor that improves quality of life by improving satisfaction with life; lower subjective health and associated lowering of health satisfaction leads to physiological and physical weakening as well as changes in the mental and psychological aspects. These changes have an overall negative influence on daily and social lives, reducing overall quality of life. However, positive perceptions of health status can be the driving factor improving future outlook and health-promoting behaviors [23]. Therefore, to improve the quality of life of elderly who live alone, it is important to introduce nursing interventions for positive perceptions to health.

Factors that meaningfully influenced quality of life in elderly women who live alone were quality of life, as mentioned previously, waist pain, and suicidal ideation.

The results of this study indicated that individuals with waist pain had lower quality of life than those without. Kim [24] reported that pain was a significant factor influencing quality of life in elderly who live alone in regional communities; pain was associated with lower quality of life, which was in line with the findings of this study. For elderly who live alone who are unable to access appropriate help from family, pain leads to difficulties in daily live such as eating, bathing, and cleaning; these difficulties are associated with lower quality of life [25]. Waist pain leads to aging and chronic diseases and increases with age. The studied women were significantly older than the men, which would have led to a higher possibility of waist pain and more significant difficulties faced in daily lives as a result. As pain is a symptom that is highly likely to lead to other physical and emotional pain, treatment is required to reduce pain.

This study indicated that suicidal ideation was a factor that significantly influenced quality of life in elderly women who live alone. Kim and Jee [26] indicated that mental health, including suicidal ideation, was a factor that meaningfully influenced quality of life in elderly individuals; Lee and Chang [27] found that there were close relationships between quality of life and suicidal ideation in elderly individuals, and anxiety and depression, which could lead to suicidal ideation, lowered quality of life. These results are in line with the findings of this study. Seo and Lee [28] indicated that elderly who live alone had higher suicidal ideation than those living with their families. Koo et al. [29] indicated that elderly women had higher levels of suicidal ideation. As suicidal ideation tends to lead to suicidal attempts and behaviors, it is an important factor in reducing quality of life as well as in predicting and understanding suicides. Therefore, to prolong life and improve quality of life, it is important to provide a diverse range of intervention to improve the

understanding of quality of life and to resolve any suicidal thoughts.

5. Conclusion

The elderly population of Korea continues to increase rapidly compared to other countries, and the number of elderly who live alone is also increasing. Quality of life becomes important along with the duration of life. The quality of life of elderly who live alone, as seen through various literature, is lower than for those who reside with their families. It is important for elderly to secure a diverse range of support mechanisms given weakening physical and psychological health; however, for elderly who live alone, it is difficult to secure such support. It is critical to confirm what help is needed to improve the quality of life of elderly who live alone and engage in appropriate interventions. The results of this study indicated differences in factors influencing quality of life depending on gender. It is important to provide intervention based on these influential factors when providing intervention to improve the quality of life of elderly who live alone. Factors influencing the quality of life of elderly men and women who live alone included physical disabilities such as pain from chronic diseases and emotional disabilities such as subjective health and suicidal ideation. Further studies are necessary to examine the factors that influence quality of life in elderly

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