

## Comparison of Health-Related Quality of Life of Elderly Men and Women in Korea

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### Abstract

*This is a descriptive study conducting a secondary analysis of the raw data from the 7th Korea National Health and Nutrition Examination Survey to compare the factors influencing quality of life in elderly men and women. For the study subjects, elderly men and women aged 65 or older were selected, a total of 8127 data items. Selecting only those subjects who properly responded to the data items necessary for the study gave a final total of 1384 used for the analysis. General Characteristics, Average daily sleep time, the level of usual stress, Depression level for two consecutive weeks, Diet economy state, Diagnosis disease sum, Health care, and Quality of life (EQ-5D) of the subjects were used for the analysis. The collected data were analyzed by descriptive statistics, ANOVA, and Pearson's correlation coefficients using the SPSS 20.0 program. The results showed that the average quality of life (EQ-5D) for men and women was  $0.91 \pm 0.13$  and  $0.85 \pm 0.17$ , respectively. The quality of life showed a significant correlation with Age ( $r = -.249, p < .001$ ), Body image ( $r = -.138, p < .001$ ), and Depression level for two consecutive weeks ( $r = -.438, p < .001$ ) in men, and with Age ( $r = -.181, p < .001$ ), level of education ( $r = -.317, p < .001$ ), Depression level for two consecutive weeks ( $r = .438, p < .001$ ), Diet economy state ( $r = -.175, p < .001$ ), and Health care ( $r = -.135, p < .001$ ) in women. These study results suggest that application of the intervention program for elderly people's quality of life should differ in its contents according to the participants' gender.*

**Keywords:** *Sleep, Stress, Depression, Quality of life*

### 1. Introduction

Due to the emergence of an aging society, the issue of improving the quality of life in the elderly has been attracting attention [1]. 'Quality of life' is defined as subjective satisfaction regarding the overall experience of life or circumstances [2]. It is a definition that combines the elderly's expectations, evaluation, and concerns regarding life [3].

Previous studies of the quality of life in the elderly reported that among general characteristics, gender [4], age [5][6], level of education [7], and economic status [8][9] were associated with quality of life. Stress [10] from mental health characteristics, and subjective health state [11], body mass index [4], chronic illness [12], and restriction of activities [13] from physical health characteristics were also associated in this way.

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Meanwhile, a study analyzing quality of life in the elderly according to gender reported that quality of life was lower in elderly women than elderly men [14], and the factors influencing their quality of life were also different [15].

Hence, our study aims to compare the factors influencing quality of life in elderly men and women aged 65 or older using the raw data from the 7th Korea National Health and Nutrition Examination Survey, and to analyze the focal point of interventions for improving the quality of life in elderly men and women.

## **2. Methods**

### **2.1. Study design**

This is a descriptive study conducting a secondary analysis of the raw data from the 7th Korea National Health and Nutrition Examination Survey to compare the effects of general characteristics and health factors on the quality of life of elderly men and women aged 65 or older.

### **2.2. Study subjects**

Within the 192 districts of the Korea National Health and Nutrition Examination Survey, foreign households and facilities such as nursing homes, military facilities, and prisons were excluded and 23 sample households were selected as study subjects using systematic sampling. Within the sample households, all household members aged one year or older who met the criteria for a proper household member were selected as study subjects [16].

From a total of 8127 data items, elderly men and women aged 65 or older were selected for the study. Where there were missing values or responses for any of the variables age, level of education, quality of life (EQ-5D), economic activity status, subjective health state, subjective body image, average hours of sleep per day, recognition level of daily stress, depression level for two consecutive weeks, dietary life condition, diagnosis disease sum, and health care, the data were excluded. Finally, 1384 data items were used for the analysis, 599 men and 785 women.

### **2.3. Study instruments**

The survey items regarding the variables used in this study consist of general characteristics (age, level of education, economic activity status, subjective health state, and subjective body image), average hours of sleep per day each week, recognition level of daily stress, depression level for two consecutive weeks, quality of life (EQ-5D), dietary life condition, diagnosis disease sum, and health care. The average hours of sleep per day was calculated from the time of going to bed and the time of waking up during one week and expressed in minutes. The recognition level of daily stress indicates the stress level experienced during daily lives. For depression level for two consecutive weeks, a ‘yes or no’ response to the question ‘Have you experienced depression for two consecutive weeks?’ was used. Quality of life (EQ-5D) was analyzed using the indices from the five domains (exercise capacity level, self-management level, daily activity level, pain-discomfort level, and anxiety-depression level) separate from health-related quality of life. Furthermore, for diagnosis disease sum, the sum of doctor’s diagnoses of hypertension, dyslipidemia, stroke, cardiac infarction, angina, arthritis, rheumatoid arthritis, osteoporosis, tuberculosis, asthma, diabetes, thyroid disease, gastric cancer, liver cancer, colon cancer, lung cancer, thyroid cancer, depression, atopic dermatitis, allergic

rhinitis, sinusitis, otitis media, cataract, glaucoma, macular degeneration, renal failure, hepatitis B, hepatitis C, and liver cirrhosis was used. In addition, for health care, details of the indices for influenza vaccination, health examinations, and cancer screening were summed and integrated.

## 2.4. Data analysis

Collected data were analyzed using the IBM SPSS 20.0 program. The study subjects' general characteristics, average hours of daily sleep each week, recognition level of daily stress, depression level for two consecutive weeks, quality of life (EQ-5D), dietary life condition, diagnosis disease sum, and health care were analyzed using descriptive statistics. The correlation between quality of life and its associated variables were analyzed using Pearson's correlation coefficients and the quality-of-life influence factors were analyzed using multiple regression.

## 3. Results

### 3.1. General Characteristics of Study Subjects

Table 1: General Characteristics (N=1384)

Variables	Categories	Men	Women
		M±SD n (%)	M±SD n (%)
Age		72.71±4.93	72.95±5.19
Level of education	1. Korean Studies	0	1 (0.1)
	2. None	31 (5.2)	170 (21.7)
	3. Elementary school	174 (29.0)	360 (45.9)
	4. Middle School	135 (22.5)	102 (13.0)
	5. High School	141 (23.5)	108 (13.8)
	6. Two-year/three-year college	14 (2.3)	15 (1.9)
	7. University	77 (12.9)	25 (3.2)
	8. Graduate School	27 (4.5)	4 (0.5)
Economic activity status	Employed	230 (38.4)	219 (27.9)
	2. Unemployed	369 (61.6)	566 (72.1)
Health state (subjective)	Very good	39 (6.5)	18 (2.3)
	2. Good	110 (18.4)	86 (11.0)
	3. Average	290 (48.4)	369 (47.0)
	4. Bad	130 (21.7)	207 (26.4)
	5. Very bad	30 (5.0)	105 (13.4)
Body image (subjective)	1. Very thin	53 (8.8)	71 (9.0)
	2. Somewhat thin	92 (15.4)	77 (9.8)
	3. Average	306 (51.1)	338 (43.1)

4. Slightly obese	137 (22.9)	232 (29.6)
5. Very obese	11 (1.8)	67 (8.5)

**3.2. Health factors and the level of quality of life (EQ-5D) in elderly men and women**

Table 2: Health factors and the level of quality of life (EQ-5D) in elderly men and women (N=1384)

Variables	Men	Women
	M±SD	M±SD
Average daily sleep time (min.)	438.28±92.33	430.82±100.0
The level of usual stress	3.15±0.72	2.96±0.84
Depression level for two consecutive weeks	1.88±0.32	1.80±0.40
Diet economy state	1.56±0.61	1.61±0.63
Diagnosis disease sum	1.76±1.52	2.63±1.72
Health care	3.73±0.94	3.88±1.02
Quality of life (EQ-5D)	0.91±0.13	0.85±0.17

**3.3. Correlations among quality of life (EQ-5D), general characteristics, and health factors in elderly men and women**

Table 3: Correlations among quality of life (EQ-5D), general characteristics, and health factors in elderly men and women (N=1384)

Variables	r(p)												
	1	2	3	4	5	6	7	8	9	10	11	12	
1	men	1											
	women	1											
2	men	-.249	1										
	women	<.001	1										
3	men	-.181		1									
	women	<.001		1									
4	men	.134	-.071		1								
	women	.001	.081		1								
5	men	.242	-.317			1							
	women	<.001	<.001			1							
6	men	-.123	.220	.083			1						
	women	.003	<.001	.041			1						
7	men	-.093	.216	.043				1					
	women	.009	<.001	.232				1					
8	men	-.388	.078	-.251	.044				1				
	women	<.001	.055	<.001	.288				1				

	women	-.464 <.001	.048 .179	-.171 <.001	.102 .004		1					
	men	.137 .001	-.167 <.001	.128 .002	.027 .512	-.138 .001		1				
6	women	-.005 .885	-.249 <.001	.163 <.001	.000 .999	-.014 .702		1				
	men	.029 .048	.101 .014	-.111 .007	.034 .408	.038 .347	-.056 .174		1			
7	women	.028 .437	.067 .062	-.090 .012	-.014 .691	.011 .758	-.067 .060		1			
	men	.259 <.001	.076 .064	.061 .134	.054 .191	-.232 <.001	.067 .102	.065 .112		1		
8	women	.269 <.001	.130 <.001	.018 .618	.034 .341	-.294 <.001	.015 .681	.077 .032		1		
	men	.242 <.001	-.052 .207	.091 .025	-.073 .072	-.189 <.001	.032 .441	-.068 .098	.344 <.001		1	
9	women	.283 <.001	-.073 .042	.146 <.001	-.006 .874	-.278 <.001	.045 .213	-.063 .077	.438 <.001		1	
	men	-.126 .002	.036 .377	.019 .641	.019 .641	.165 <.001	-.046 .262	-.086 .035	-.050 .223	-.116 .005	1	
10	women	-.175 <.001	.085 .017	-.189 <.001	.029 .413	.194 <.001	-.034 .342	-.026 .475	-.143 <.001	-.175 <.001	1	
	men	-.171 <.001	.113 .006	-.021 .610	.133 .001	.269 <.001	.000 .993	-.079 .055	-.036 .374	-.142 <.001	.046 .264	
11	women	-.196 <.001	.043 .228	.003 .927	.130 <.001	.272 <.001	.159 <.001	-.092 .010	-.091 .011	-.076 .034	-.089 .012	
	men	-.128 .002	.062 .131	-.101 .014	.037 .366	.098 .016	-.139 .001	-.006 .877	.000 .996	-.015 .705	.181 <.001	-.117 .004
12	women	-.066 .066	.152 <.001	-.078 .028	.054 .133	.032 .376	-.081 .024	.010 .772	-.023 .514	-.060 .091	.082 .021	-.135 <.001

Note; 1=Quality of life (EQ-5D), 2=Age, 3=Level of education, 4=Economic activity status, 5=Health state (subjective), 6=Body image (subjective), 7=Average daily sleep time, 8=The level of usual stress, 9=Depression level for two consecutive weeks, 10=Diet economy state, 11=Diagnosis disease sum, 12=Health care

### 3.4. Influence factors for the subjects' quality of life (EQ-5D)

Table 4: Comparison of health-related quality of life of elderly men and women in Korea (N=1384)

	Men					Women				
	B	SD	$\beta$	t	p	B	SD	$\beta$	t	p

Constant	1.31 5	.08 8		14.98 2	<.00 1	1.21 1	.09 2		13.16 7	<.0 01
Age	-.00 5	.00 1	-.20 3	- 5.439	<.00 1	-.00 4	.00 1	-.12 3	- 3.710	<.0 01
Health state (subjective)	-.03 9	.00 6	-.27 1	- 6.910	<.00 1	-.06 4	.00 6	-.34 4	- 10.17 6	<.0 01
Level of education	.001	.00 3	.017	.452	.651	.017	.00 5	.124	3.748	<.0 01
Economic activity status	-.01 6	.01 0	-.06 0	- 1.618	.106	-.01 1	.01 2	-.03 0	-.948	.343
Body image (subjective)	.006	.00 5	.038	1.041	.299					
The level of usual stress	.032	.00 7	.172	4.429	<.00 1	.027	.00 7	.131	3.749	<.0 01
Depression level for 2 consecutive weeks	.042	.01 6	.101	2.631	.009	.039	.01 5	.093	2.651	.008
Diet economy state	-.00 7	.00 8	-.03 1	-.836	.404	-.00 9	.00 9	-.03 2	- 1.016	.310
Diagnosis disease sum	-.00 5	.00 3	-.05 3	- 1.407	.160	-.00 7	.00 3	-.07 2	- 2.282	.023
Health care	-.01 1	.00 5	-.07 8	- 2.126	.034					
R2=.264, Adj R2=.251, p= <.001					R2=.296, Adj R2=.289, p= <.001					

#### 4. Conclusion

This is a descriptive study conducted to compare differences in the factors influencing the quality of life in elderly men and women aged 65 or older using raw data from the 7th Korea National Health and Nutrition Examination Survey and to analyze the focal point of intervention for improving the quality of life in elderly men and women. The average quality of life was  $0.91 \pm 0.13$  in elderly men and  $0.85 \pm 0.17$  in elderly women aged 65 or older.

The influence factors for quality of life in elderly men were found to be age, subjective health state, recognition level of daily stress, depression level for two consecutive weeks, and health care, and these factors explained their quality of life by 25.1%. The influence factors for quality of life in elderly women were found to be age, subjective health state, level of education, recognition level of daily stress, depression level for two consecutive weeks, and diagnosis disease sum, and these factors explained their quality of life by 28.9%.

These study results suggest that the contents of the intervention program for quality of life in the elderly should differ according to subjects' gender.

As this study is a secondary analysis of national data, there are limitations in the generalization of our study results. Further studies are required to validate our results through replications and various approaches on subjects and scale.

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