

# The Relationship among Quality of Life, Depression and Subjective Health Status of the Elderly with Chronic Disease in Korea

Sejin Ju and Kyung-Sook Kim\*

Department of Nursing, Namseoul University, Cheonan, 330-701, South Korea;  
lovepdd@nsu.ac.kr, kgs321@nsu.ac.kr

## Abstract

**Objectives:** Quality of life is a critical issue of elderly people. This study aimed to examine the factors that influence the quality of life of the elderly with chronic disease in Korea. **Methods:** Data collection was carried out on October 29-30, 2010. After the initial contact to explain the study's purpose, the Korea Southern Power (KOSPO) assisted the study and provided a list of fragile elderly with chronic disease. Answer sheets from 125 respondents were gathered, and 101 of them were analyzed except for 24 incomplete ones. Frequency analysis, t-test, and multiple regressions were used in the research. **Results:** The mean age of the participants was 77.45 years, with 76 (75.2%) of them being female. Regarding educational level, 42 (41.6%) participants were illiterate in status and 25 (24.8%) participants graduated from elementary school. Regarding religion, 66 (65.3%) of the participants has religion. Of the 101 participants, 16 (18.4%) were good or very good health status, 33 (37.9%) subjects were moderate health status. The mean of systolic blood pressure was  $142.44 \pm 15.53$ , the mean of diastolic blood pressure was  $88.56 \pm 10.48$  and the mean of blood sugar was  $135.69 \pm 36.15$ . The level of their quality of life was  $2.58 \pm 0.36$  points (ranging 1-3). In correlation analysis, quality of life was significantly correlated with depression ( $r = -.514$ ,  $p < .001$ ), health status ( $r = .805$ ,  $p < .001$ ), MMSE ( $r = .430$ ,  $p < .001$ ). In multiple analysis, educational level ( $t = 2.541$ ,  $p = .014$ ), depression ( $t = -2.867$ ,  $p = .006$ ), and subjective health status ( $t = 9.985$ ,  $p < .001$ ) were found to be factors significantly associated with quality of life. These variables explained 71.9% of the elderly's quality of life with chronic disease. **Conclusion:** The results of the study showed the significance of depression and subjective health status to improve the quality of life of the elderly.

**Keywords:** Chronic Disease, Depression, Elderly, Quality of Life, Subjective Health Status

## 1. Introduction

Globally, the elderly population continues to increase and the same goes for South Korea, with its elderly increasing at a faster pace. Its elderly population grew from 7.0% in 2000 to 12.2% in 2013<sup>1</sup>. Consequently, the elderly with chronic disease has also increased, and the medical expenses of the aged population have rapidly increased recently to 2.93 million won per person in the country<sup>1</sup>.

Poor cognitive function, depression, decreased function status and chronic disease are closely associated

in the elderly. Most of the elderly have risk factors for depression, including loss of important people, disabilities, financial issues and role maladjustments<sup>2</sup>. Today, many older people show depressed emotional status and their quality of life has been diminished by various reasons such as chronic disease, declined income, loss of spouse and so on.

In nursing care, the goal of the health management for the elderly is not only to prolong their lifetime merely but also to increase their quality of life which is important outcome measure in achieving and maintaining a good

\*Author for correspondence

life' of older people<sup>3</sup>.

Quality of life is the general well-being of individuals. According to the World Health Organization<sup>4</sup>, quality of life is defined as individuals' perceptions of their position in life in the context of the culture and value system in which they live, and in relation to their goals, expectations, standards, and concerns<sup>4</sup>. Also, standard indicators of the quality of life contain not only wealth and employment but also an individuals' environment, physical and mental health, education, recreation and leisure time, and social belonging<sup>5</sup>.

The studies on elders' quality of life have been mainly conducted in relation to health. Previous studies have shown that influencing factors and correlated variables that are health-related and which affect the quality of life in elders with chronic disease are frailty, chronic heart failure<sup>6,7</sup>, and music intervention<sup>3</sup>.

A study by Lee et al.<sup>8</sup> showed that five factors with statistical significance were identified for health-related quality of life: monthly income, diagnosis of chronic disease, depression, discomfort, and perceived health status<sup>8</sup>. The elderly suicide rate is high compared to the other age groups<sup>9</sup>. Diminished quality of life impacts depression, with increased depression finally influencing suicidal ideation<sup>10</sup>. Consequentially, problems among elders, such as suicide, low quality of life, and depression have become social concerns. Therefore, health leaders are struggling to solve elders' problems because elderly suicide rate is higher in South Korea than in other countries. Hence, there is a need to identify such impacting factors in order to promote a high quality of life for the elderly. Although quality of life had been examined in a national basic livelihood act where older adults are recipients in Korea<sup>11</sup>, studies on the quality of life of elders with chronic disease have hardly been carried out in the country. Therefore, this study attempts to test the causes that affect the quality of life of the elderly with chronic disease in Korea.

## 2. Methodology

### 2.1 Study Design

This study used a cross-sectional research design to analyze the quality of life of elderly people who have chronic disease

### 2.2 Study Samples

The subjects of this study were the elderly with chronic disease in Korea. A survey was conducted among them in 2010. Answer sheets from 125 respondents were gathered and 101 of them were analyzed except for 24 incomplete ones.

### 2.3 Measurements

#### 2.3.1 Quality of Life

A 3-item program questionnaire was used to assess the quality of the program in terms of its educational contents and skills training, the direct and indirect experience of the care workers, and the appropriateness of the program management.

We used EQ-5D (European Quality of Life-5 Dimensions) for health-related quality of life. EQ-5D is a generally utilized health condition measuring instrument<sup>12</sup>. It is composed of five dimensions: mobility, self-care, usual activities, pain/discomfort and anxiety/depression. The units were ranked on a 3-point scale (1=performed badly, 2=performed with a few difficulties, 3=performed well). Higher scores imply a higher level of health-related quality of life. The Cronbach's alphas for the health-related quality of life were .63.

#### 2.3.2 Depression

Leshner and Berryhill<sup>13</sup> validated the Geriatric Depression Scale Short Form (GDS-SF). They reported that the Geriatric Depression Scale Long Form (GDS-LF) and GDS-SF were found to be correlated highly overall which suggests that the GDS-SF is an acceptable substitute for the GDS-LF. GDS-SF consists of 15 items and were rated on a dichotomous response scale (1= yes, 0= no). Higher scores indicated a higher level of depression. The Cronbach's alphas for GDS-SF were .79

#### 2.3.3 Subjective Health Status

Subjective health status was assessed as follows: In general, would you say your health is 1. Poor 2. Fair 3. Good 4. Very good 5. Excellent.

#### 2.3.4 K-MMSE

For cognitive function test, the Mini-Mental State Exam (MMSE) is one of the most widely used in clinical practice.

Since its development by Folstein in 1975<sup>14</sup>, the MMSE has been a reliable test for screening cognitive function. It takes 10-20 minutes to perform and has been used in many observational and clinical studies. The Korean version of the MMSE (K-MMSE)<sup>15</sup> has been applied to all subjects. The total score of the K-MMSE is 30 points and consists of five domains of cognition: orientation, registration, attention, calculation, recall and language. Scores of 24 or less suggest the presence of decline of cognition.

## 2.4 Data Collection

Data collection was carried out on October 29-30, 2010. After the initial contact to explain the study's purpose, the Korea Southern Power (KOSPO) assisted the study and provided a list of fragile elderly with chronic disease. The participants were briefed about the research objective and method, and submitted written consents. The research assistants helped the elderly respond to the self-administered questionnaires. After which, the questionnaires were distributed and collected. It took about 20 minutes to answer the questionnaire.

## 2.5 Data Analyses

The collected data were analyzed with SPSS18.0 statistical program. Frequency analysis, t-test and multiple regressions were used in the research.

# 3. Results

## 3.1 Participant Characteristics

The baseline characteristics of the study participants are shown in Table 1. The study participants were 101 fragile older people. The mean age of the participants was 77.45 years and 76 (75.2%) of them were female. Regarding educational level, 42 (41.6%) participants were illiterate in status and 25 (24.8%) participants graduated from elementary school. Of the 101 participants, 16 (18.4%) were good or very good health status, 33 (37.9%) subjects were moderate health status and 38 (43.6%) were bad or very bad health status. The mean of systolic blood pressure was  $142.44 \pm 15.53$ , the mean of diastolic blood pressure was  $88.56 \pm 10.48$  and the mean of blood sugar was  $135.69 \pm 36.15$ . Regarding religion, 66 (65.3%) of the participants has religion.

## 3.2 Descriptive Statistics for Variables

Descriptive statistics for depression, quality of life and MMSE and health status are shown in Table 2. The level of quality of life was  $2.58 \pm 0.36$  points (ranging 1-3) and the level of depression was  $5.63 \pm 3.51$  points (ranging 1-15). The level of health status was  $2.62 \pm 1.00$  (ranging 1-5), the level of MMSE was  $22.61 \pm 5.22$  points (ranging 1-30).

## 3.3 Quality of Life According to General Characteristics

Table 3 shows quality of life according to general characteristics. There were significant differences in subjective health status ( $F=38.352$ ,  $p<.001$ ). In subjective health status, the elderly people in good subjective health status felt a higher quality of life than those in bad subjective health status.

## 3.4 Correlation Analysis among Quality of Life, Depression, Subjective Health Status and MMSE

Table 4 shows correlation analysis among statistics for quality of life, depression, subjective health status, and MMSE. Quality of life was significantly correlated with depression ( $r=-.514$ ,  $p<.001$ ), health status ( $r=.805$ ,  $p<.001$ ), MMSE ( $r=.430$ ,  $p<.001$ ).

## 3.5 Factors Influencing Quality of Life

Multiple regressions were conducted to examine the effect factors on the quality of life (Table 5). Educational level ( $t=2.541$ ,  $p=.014$ ), depression ( $t=-2.867$ ,  $p=.006$ ), and subjective health status ( $t=9.985$ ,  $p<.001$ ) were found to be factors significantly associated with quality of life. These variables explained 71.9% of the quality of life of the elderly people with chronic disease.

# 4. Discussion

Rising life expectancy leads to a greater number of old adults and a subsequent increase in the prevalence of chronic disease among the older population. Chronic disease of the elderly is exhausting to patients and their families because it often requires prolonged periods of treatment and long-term services. Quality of life among

**Table 1.** General characteristics (N=101)

Variables*	Category	n(%), Mean±SD
Gender	Male	25 (24.8)
	Female	76 (75.2)
Educational level	None (illiterate)	42(41.6)
	≤ Elementary	25(24.8)
	≤ Middle school	9 (8.9)
	≤ High school	25 (24.8)
Religion	Yes	66 (65.3)
	No	35(34.7)
Subjective health status	Very good	2 (2.3)
	Good	14 (16.1)
	Moderate	33(37.9)
	Bad	25 (28.7)
	Very bad	13(14.9)
Age		77.45±6.62
Systolic blood pressure		142.44±15.53
Diastolic blood pressure		88.56±10.48
Blood sugar		135.69±36.15

older people becomes degrading in a continuous process of long-term care and treatment. Nowadays the health-related quality of life issues are shown as a critical outcome measure in a lot of clinical research studies among the elderly with chronic debilitating disease<sup>7,8,16</sup>. To focus on

these issues, we evaluated the factors that influence the quality of life of the elders with chronic disease in South Korea.

The participants had poor scores on depression, subjective health status, and K-MMSE. Participants' blood

**Table 2.** Descriptive statistics for variables (N=101)

Variables	Range	Mean±SD
Quality of life	1-3	2.58±0.36
Depression	1-15	5.63±3.51
Subjective health status	1-5	2.62±1.00
K-MMSE	1-30	22.61±5.22

pressure and blood sugar level were a bit high. Of the 101 participants, 16 (18.4%) were good or very good, 33 (37.9%) subjects were of moderate health status and 38 (43.6%) were of bad health status. This finding is partially similar from the results of an earlier study examining subjective health status among Korean older people's statistics<sup>17</sup>. According to Korean older people's statistics, older people reported that 20.4% of the elderly felt their perceived health to be good or very good, while 49.4% of the elderly felt their perceived health to be bad or very bad.

Correlation analysis showed that quality of life was positively correlated with cognitive function and perceived subjective health status, and negatively correlated with depression. Prior studies have shown that depression may lead to poor quality of life in elderly people<sup>6,18</sup>, which are similar to our results.

The Chosun Ilbo reported that quality of life ranked close to the bottom in all categories apart from education and public safety in Korea<sup>19</sup>. Koreans are slightly less satisfied with their lives than the OECD average, with 75% of people saying they have more positive experiences than

**Table 3.** Quality of life according to general characteristics (N=101)

Variables	Categories	Mean±SD	t or F	p
Gender	Male Female	2.54±0.35 2.59±0.36	-0.528	.599
Educational level	None (illiterate) ≤ Elementary ≤ Middle school ≤ High school	2.52±0.37 2.59±0.28 2.63±0.28 2.69±0.44	0.889	.450
Religion	Yes No	2.57±0.38 2.60±0.34	-0.374	.709
Subjective health status	Very good Good Moderate Bad Very bad	3.33±0.01 <sup>5)</sup> 3.00±0.06 <sup>4)</sup> 2.67±0.23 <sup>3)</sup> 2.41±0.23 <sup>2)</sup> 2.13±0.23 <sup>1)</sup>	38.352 (5), 4)>3)>2)>1)	<.001

**Table 4.** Correlation analysis for quality of life, depression, subjective health status and MMSE (N=101)

Variables	Quality of Life	
	r	p
Depression	-.514	<.001
Subjective health status	.805	<.001
MMSE	.430	<.001

**Table 5.** Factors influencing quality of life (N=101)

Variables	B	SE	Beta	t	p
Gender <sup>1</sup>	.029	.059	.033	0.485	.630
Age	.002	.004	.032	0.409	.684
Educational level	.060	.024	.195	2.541	.014
Systolic BP	.003	.002	.122	1.193	.238
Diastolic BP	-.005	.004	-.142	-1.348	.183
Blood sugar	-.001	.001	-.121	-1.599	.115
Depression	-.022	.008	-.227	-2.867	.006
Subjective health Status	.250	.025	.705	9.985	<.001
MMSE	.004	.006	.060	0.751	.456

F = 20.002\*\*\* adj. R<sup>2</sup> = .719

negative ones in an average day. This figure is slightly lower than the OECD average of 76%<sup>19</sup>.

In our study, the influential factors on the quality of life of the elderly with chronic disease are their subjective health status, depression, education level. These findings support previous studies which had shown factors such as income, chronic disease, depression, and perceived health status impacting health-related quality of life<sup>8,20</sup>. Our findings are also similar to Cho and Chung's<sup>21</sup> study which stated that subjective health status affects quality of life in the group of old adults. According to a previous study<sup>22</sup>, subjective health status was thoroughly related to suicidal ideation. When elderly people suffered from depression more than two weeks, 65.2% of subjects experienced suicidal ideation<sup>22</sup>. That is, suicidal ideation is more likely to decrease when perceived subjective health status was improved. Therefore, it can be clearly seen that how negative factors impact the quality of life of elderly people.

Furthermore, the quality of life among the elderly with chronic disease was closely correlated with depression and subjective health status. Thus, it is important to detect depression and monitor the management of chronic disease among elders.

According to a report by the Korea Joongang Daily, the number of elderly patients suffering from depression increased by 65.9 percent in five years, from 89,000 in 2004 to 148,000 in 2009<sup>23</sup>. Compared to the young people suffering from depression, elderly patients are reluctant to be admitted due to their mental condition and they complain about physical problems instead<sup>23</sup>. Thus, it is important for the family around older people to detect if they are actually suffering from depression.

Our results showed that K-MMSE didn't affect quality of life. The participants showed slightly impaired cognitive function status as the mean of K-MMSE is 22.61. Mild cognitive impairment cannot be simply detected by health professional. The early detection of cognitive impairment is extremely vital because cognitive impairment can lead to not only dementia but also to impaired quality of life<sup>24</sup>. Jung et al.<sup>16</sup> has also addressed that it is crucial to develop the early detection program for cognitive impairment. In the future, a study on the quality of life and cognitive function is required.

Based on these outcomes, first, it is required to identify and implement efficient long-term service, nursing intervention and programs to promote the quality of life

and protect the health of elderly people who are suffering from chronic diseases. Second, it is also required to manage and monitor continuously about chronic disease within health care systems. Third, the health department should provide scientific and programmatic strategies that decrease long-term care needs and maintain the health and quality of life of the elderly who have chronic illness.

## 5. Conclusion

This study addresses critical issues related to the quality of life of the ill elderly. We tested how factors such as depression, subjective health status, and cognitive function, affect the quality of life of the fragile elderly. The results showed that significant factors influencing quality of life were educational level ( $t=2.541$ ,  $p=.014$ ), depression ( $t=-2.867$ ,  $p=.006$ ), and subjective health status ( $t=9.985$ ,  $p<.001$ ). These variables explained 71.9% of the quality of life of elderly people with chronic disease. To improve the elderly people's quality of life, there should be a developed health program reducing depression among the elders.

## 6. Acknowledgment

This research was supported financially by Namseoul University in 2015.

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