한국의 지역사회 거주노인들에게 있어서 우울증, 만성질환, 일상생활활동이 삶의 질에 미치는 영향

Impact of Depression, Comorbid Chronic Diseases, and ADL on Health-Related Quality of Life Among Community-Dwelling Elderly People in Korea

김명화
우송대학교 스포츠건강관리학과

Myung-Wha Kim(mw9841@wsu.ac.kr)

요약

본 연구는 지역사회 거주 노인들의 건강관련 삶의 질에 영향을 미치는 위험요인들을 측정하여 평가 하는 것을 목적으로 하였다.

연구대상은 지역사회 거주노인 총 314명(연령평균:75.8세(5.64))이며 무질병 대상자가 81명, 만성질환자가 233명이며, 2개월 동안 삶의 질에 관한 설문지를 활용하여 상담을 실시하였다.

일상생활활동은 Barthel Index(BI)와 Frenchay Activities Index(FAI)로 평가하였으며 심리상태는 노인우울척도, 건강관련 삶의 질은 한국판 SF −36으로 평가하였다.

조사결과 중복 만성질환 노인은 일상생활동작이 떨어지며, 우울하고, 인지기능의 저하와 건강관련 삶의 질이 낮은 것으로 나타났다. 또한 우울증, 중복 만성질환 및 일상생활활동이 노인의 건강관련 삶의 질을 저하시키는 것으로 나타났다. 본 연구는 중복 만성질환과 낮은 일상생활활동이 우울증과 결합되어 건강관련 삶의 질을 더욱 저하시킬 수 있다는 것을 새롭게 제시하였다.

■ 중심어 : | 우울증 | 중복 만성질환 | 일상생활활동 | 건강관련 삶의 질 | SF-36 |

Abstract

The purpose of study was evaluated associations among risk factors to have influence on HRQOL of community dwelling Elderly People.

Total 314 community dwelling elderly persons(age:75.80±5.64[mean±SD]) who had no disease(n=81) and more than two chronic diseases (n=233) were interviewed based on the QOL questionnaires. During two months. The activities of daily living were evaluated using BI and FAI. Neuropsychological status was evaluated using GDS. Health related QOL was evaluated using the SF-36.

The results emphasize the importance of preventing and controlling depression, chronic diseases, and low basic activities of daily living in order to reduce their impact on HRQOL among community dwelling elderly people.

■ keyword : | Depression | Comorbid Chronic Diseases | ADL | HRQOL | SF-36 |

Ⅰ. Introduction

1. Purpose of study

Considering the rapid aging in Korea, it is needed to be determined how physical and mental conditions of elderly persons have influence on their quality of life. In Korea, especially the suicide of elderly people has become a grave problem since the rate of suicide itself is highest among OECD countries and the number of suicide of 65 and over elderly people is ranked as first among all the age groups and the increase rate of suicide of them is relatively high[1]. This might reflect the social reality, even though life expectancy has been extended, elderly people are not assured of the quality of life. In this context, to assure of the quality of life of elderly people, their physical and mental health should be taken into consideration.

According to recent studies, depression has a negative influence on their physical and mental health[2-4]. Again, their life is affected by poor physical and mental distresses[5][6]. The elderly have various chronic diseases, which have serious influences on mental health[7][8]. Also, depression leads to personal chronic disease, which makes the quality of life of a depression patient lower than a diabetes or arthritis one[5].

Further, appropriate physical activities have positive influences on a personal quality of life by helping maintain physical and mental health. It is reported that gradual resistance exercise lowers the level of depression and that the health related quality of life is lower by 1.2 to 2.4 times in the people with non-active physical activities than those with recommended physical activities[9].

Recently, more emphasis is put on the importance of comprehensively assessing health for a successful elderly age[10]. In South Korea, there is, however, no research on the effects of depression, comorbid chronic diseases and the activities of daily living on the health related quality of life of community dwelling elderly people. It is reported that the outcome of personal medical intervention can be evaluated by examining the quality of life[11] and chronic diseases or depression can affect the daily life and welfare of a patient[12]. Hence, this study aims to determine how the heath related quality of life of the elderly is affected by depression, chronic diseases and overall daily life function.

Ⅱ. Methods

1. Depressive symptoms assessment

The shortened version of the Geriatric Depression Scale (GDS) to identify depression was used for the assessment of mental functions. The short version consisted of 15 items and the maximum possible total score is 15 points. The higher score points that elderly obtained from GDS indicates the more depressed they are. As in previous studies[13][14], this study regarded the GDS points from 0 to 5 and 6 or higher as without depression and with depression, respectively.

2. Comorbid chronic diseases

The elderly living in Seoul were asked about 14 chronic diseases, such as arthritis, hypertension, urinary incontinence, renal disorder, peptic ulcer, depression, back pain, anemia, insomnia, neuralgia, diabetes, cancer, osteoporosis and disc. The total number of chronic diseases was presented by adding the numbers of individual chronic diseases.

3. Activities of Daily Living Assessments

The activities of daily living were assessed by the Korean version of Barthel Index (BI) and Frenchay

Activity Index (FAI). The Barthel Index (BI) consists of 10 items to assess the basic activities of daily living such as feeding, bathing, walking, and toilet use[15]. The highest score of 100 points means that no help is needed for basic daily living and the points less than 100 points mean that there is any movement in need of even partial help in daily living.

The FAI is the scale to measure the high-level abilities of instrumental activities of daily living such as preparing meals, performing housework and social activities. It consists of 15 items, the survey has the maximum possible score of each item is 3 points and the total would be 45 points. The lower scores that elderly obtained from FAI assessment indicate the more impediments in daily living.

4. Health related quality of life

The Korean version of the Short-Form 36-Item Health Survey was carried out to assess the health-related quality of life[15]. The SF-36 comprises eight health sub-scales: Physical Functioning (PF), Social Functioning (SF), Role Physical (RP), Role Emotional (RE), Mental Health (MH), Vitality (VT), Bodily Pain (BP) and General Health (GH). Each subscale is converted to 100 points and can be largely classified into two higher scales; physical health (PH) and mental health (MH).

5. Additional covariables

The additional items included general information about gender, age, marital status, family composition, and disease. In addition, the items were asked about medical assurance, religion, income, and using of the assistive technology devices.

6. Analyses

First, depression, chronic disease and activities of daily living were analyzed by gender. Second, it was analyzed how the health-related quality of life was affected by whether elderly people have comorbid chronic diseases. Lastly, it was analyzed how the health-related quality of life was affected by depression, comorbid chronic diseases and activities of daily living in local community.

All statistical analyses were used the Statistical Package for Social Sciences (SPSS 12.0K). Chi-square test, t-test and ANOVA for analysis between groups, and multiple regression analysis as well as frequency analysis and descriptive statistics were employed for statistical methods.

Ⅲ. Results

1. Subject Characteristics

The questionnaires of a total 314 respondents were analyzed; female 263(83.8%) and male 51(16.2%).

As for the demographic characteristics, the mean age was 75.8 (SD=5.6). The highest age was 93 and the lowest age was 65. While males' mean age was 74.4 (SD=5.2), females' mean age was 76.1(SD=5.7), which shows that females' mean age was higher than males' (t=-2.012, p=0.045).

The mean of education level was 6.7 years (SD=4.9). While the mean of education level of males was 10.4 years (SD=4.5), that of females was 5.9 years (SD=4.6), which the females' education level was much lower than males' (t=6.444, p<0.001). For the elderly living alone or with, 195(62.1%) of respondents lived alone and only 118 (37.6%) lived with spouse or family members.

Tab 1. Subject Characteristics (n=314)

	male	female	total	t or Chi-square
n (%)	51 (16.2)	263 (83.8)	314 (100)	Value
age (SD)	74.35 (5.26)	76.08 (5.69)	75.80 (5.64)	-2.012 *
Education level (years) (SD) (n=299)	10.41 (4.47)	5.90 (4.57)	6.67 (4.85)	6.444 ***
Health				
Healthy	32	49	81	43.428 ***
With two more chronic disease	19	214	233	
Living condition (n=313)				
Alone	18	177	195	28.130 ***
With a spouse	19	28	47	
With other family members	11	52	63	
others	2	6	8	
Barthel Index	98.92 (3.91)	98.17 (6.94)	98.30 (6.55)	.745 n.s.
Frenchay Activities Index	22.82 (8.54)	25.02 (7.41)	24.66 (7.63)	-1.713 n.s.
Geriatric Depression Scale	4.63 (4.01)	6.29 (4.91)	6.02 (4.81)	-2.599 *

*p <0.5, **p<0.01, ***p< 0.001, n.s. = not significant.
t-test for age, education level, BI, FAI, and GDS.
Chi-square test for Health and Living conditions.

[Table 1] shows the demographic characteristics of 314 respondents. Elderly persons who had no disease were 81(25.8%). Elderly persons who had more than two chronic diseases among arthritis, diabetes and hypertension were 233 (74.2%); 185 (58.9%) of them had two chronic diseases and 48 (15.3%) had three chronic diseases. While 214 (81.4%) of females had comorbid chronic diseases, 32 (62.7%) of males, which was over half of 51 males, didn't have any chronic disease. It showed that females tend to significantly have more chronic diseases than male (Chi-square = 43.43, p<0.001).

As the result of GDS test, the mean was 6.0 (SD=4.8) and the mean of females was higher than that of males (t=-2.599, p=0.011).

BI to assess the activities of daily living was 98.3 (SD=6.5) and that of FAI was 24.7 (SD=7.6). There was no significant difference in gender from both BI and FAI.

2. Comparison of Mean Differences by Gender on HRQOL

The assessment result of the mean of gender differences among 8 sub-scales for health related quality of life with SF-36 is shown on [Table 2]. A comparative analysis was made of the averages of two groups using the paired sample t-test in order to determine what differences in meaning there were between male and female groups of 8 sub-scales. This showed that female had a lower quality of health-related life than male in all of 8 sub-scales.

Tab 2. SF-36 scale scores by sex

	Male mean (SD)	Female mean (SD)	Total mean (SD)	t value
PF	78.13 (26.64)	55.38 (26.15)	59.08 (27.50)	5.670 ***
RP	80.88 (27.60)	67.99 (25.15)	70.08 (25.96)	3.297 **
BP	79.63 (27.49)	63.48 (24.03)	66.10 (23.89)	4.554 **
GH	66.29 (24.89)	48.90 (24.03)	51.72 (24.97)	4.702 ***
VT	65.07 (26.49)	53.99 (20.70)	55.79 (22.08)	2.825 **
SF	85.29 (21.17)	77.19 (20.89)	78.50 (21.12)	2.531 *
RE	83.50 (25.68)	71.64 (25.86)	73.57 (26.16)	2.999 **
MH	73.43 (24.38)	63.82 (20.77)	65.38 (21.65)	2.937 **
PCS	304.94 (95.95)	235.75 (77.34)	246.99 (84.44)	5.609 ***
MCS	307.29 (83.66)	266.64 (71.19)	273.24 (74.74)	3.623 ***

*p <0.5, **p<0.01, ***p< 0.001

PF, Physical Functioning; RP, Role Physical; BP, Bodily Pain; GH, General Health; VT, Vitality; SF, Social Functioning; RE, Role Emotional; MH, Mental health; PCS, Physical Component Summary; MCS, Mental Component Summary.

Especially, female PCS (Physical Component Summery)(M = 235.75, SD = 77.34) was significantly low, comparing with male PCS (M= 304.94, SD = 95.95), t = 5.609 (312), p = .000 (two-tailed). Also, female MCS (Mental Component Summery)(M = 266.64, SD = 71.19) was significantly low, comparing with male MCS (M= 307.29, SD = 83.66), t = 3.623 (312), p = .000 (two-tailed).

3. Relationship of depression, comorbid chronic diseases, and ADL on HRQOL

Tab3. Comparison between healthy elderly and elderly with comorbid chronic diseases (n=314)

	Healthy	Comorbid Chronic diseases	t or Chi-square value
n (%)	81(25.8)	233 (74.2)	value
age (SD)	72.46 (5.08)	76.97 (5.38)	-6.594 ***
Education level (SD) (n=299)	9.32 (4.68)	5.72 (4.56)	5.968 ***
Living condition (n=313)			
Alone	23	172	56.88 ***
With a spouse	27	20	
With other family members	25	38	
Others	5	3	
Barthel Index	99.51 (2.03)	97.88 (7.46)	3.028 **
Frenchay Activities Index	26.22 (8.88)	24.12 (7.09)	1.932 n.s.
Geriatric Depression Scale	3.32 (3.28)	6.95 (4.90)	-7.479 ***

*p <0.5, **p<0.01, ***p< 0.001, n.s. = not significant.
t-test for age, education level, BI, FAI, and GDS.
Chi-square test for Living conditions.

[Table 3] shows the differences in general characteristics, activities of daily living, depression and cognitive functions between the elderly with or without comorbid chronic diseases. There were significant differences in all scales except instrumental activities of daily living between the elderly with or without comorbid chronic diseases. The older age increased the possibility of comorbid chronic diseases, but the higher level of education lowered the possibility of comorbid chronic diseases. Also, the elderly with family had much lower possibility of comorbid chronic diseases than those without family.

Especially, BI(M = 97.88, SD = 7.46) of instrumental activities of daily living in the elderly with comorbid chronic diseases was significantly low, compared to BI (M= 99.51, SD = 2.03), t = 3.028(301.696), p = .003(two-tailed) in the healthy elderly. The elderly with comorbid chronic diseases showed the low degree of the basic activities of daily living such as feeding, bathing, walking and toilet use than healthy elderly.

Depression was significantly higher among the elderly with comorbid chronic diseases than healthy elderly, when comparing GDS (M = 6.95, SD = 4.90) among the elderly with comorbid chronic diseases with GDS (M= 3.32, SD = 3.28), t = −7.479(209.178), p = .000(two-tailed) among the elderly without them. Therefore, the elderly with comorbid chronic diseases had higher possibility of depression than the elderly without them

Tab 4. SF-36 scale scores by health

	Healthy mean (SD)	Comorbid Chronic diseases mean (SD)	t value
PF	83.33 (21.32)	50.64 (24.23)	10.777 ***
RP	86.34 (21.08)	64.43 (25.13)	7.653 ***
BP	86.20 (19.16)	59.11 (21.29)	10.108 ***
GH	74.82 (18.17)	43.69 (21.82)	12.580 ***
VT	72.91 (19.39)	49.84 (19.76)	9.099 ***
SF	89.66 (16.63)	74.62 (21.16)	6.509 ***
RE	88.89 (18.77)	68.24 (26.29)	7.633 ***
MH	80.12 (17.01)	60.26 (20.74)	7.759 ***
PCS	330.70 (59.39)	217.89 (71.46)	12.753 ***
MCS	331.58 (55.65)	252.96 (69.76)	9.175 ***

*p <0.5, **p<0.01, ***p< 0.001
PF, Physical Functioning; RP, Role Physical; BP, Bodily Pain; GH, General Health; VT, Vitality; SF, Social Functioning; RE, Role Emotional; MH, Mental health; PCS, Physical Component Summary; MCS, Mental Component Summary.

[Table 4] shows the differences of health related quality of life according with or without comorbid chronic diseases.

As seen in the table, the elderly with comorbid chronic diseases showed the low degree of the health-related quality of life than the elderly without comorbid chronic diseases in all of eight categories for assessing the health-related quality of life.

Specifically, PCS (M = 217.89, SD = 71.46) was significantly low among the elderly with comorbid chronic diseases, comparing with PCS (M= 330.70, SD = 59.39), t = 12.753 (312), p = .000 (two-tailed) in the elderly without comorbid chronic diseases. In other words, the elderly with comorbid chronic diseases showed the low degree of the quality of physical life

than the elderly without comorbid chronic diseases. Also, MCS (M = 252.96, SD = 69.76) was significantly low among the elderly with comorbid chronic diseases, comparing with MCS (M= 331.58, SD = 55.65), t = 9.175 (312), p = .000 (two-tailed) in healthy elderly. In other words, the elderly with comorbid chronic diseases showed lower degree of the quality of mental life than the elderly without comorbid chronic diseases.

In summary, the elderly with comorbid chronic diseases showed the low degree of the basic activities of daily living, higher degree of depression, and the low degree of health- related quality of life.

Tab5. Correlations between SF-36 scale scores and related factors

	age	education level	BI	FAI	GDS
PF	-0.46 ***	0.26 ***	0.29 ***	0.16 ***	-0.37 ***
RP	-0.39 ***	0.21 ***	0.26 ***	0.17 ***	-0.32 ***
BP	-0.29 ***	0.30 ***	0.16 ***	0.16 ***	-0.37 ***
GH	-0.20 ***	0.24 ***	0.19 ***	0.14 *	-0.59 ***
VT	-0.32 ***	0.33 ***	0.12 ***	0.19 ***	-0.65 ***
SF	-0.29 ***	0.22 ***	0.17 ***	0.10 n.s.	-0.34 ***
RE	-0.37 ***	0.18 ***	0.23 ***	0.17 ***	-0.33 ***
MH	-0.29 ***	0.32 ***	0.20 ***	0.18 ***	-0.61 ***

Person's correlation coefficient. * p < 0.001 ** p < 0.005 *** p < 0.05. ns, no significant.
BI, Barthel Index; FAI, Frenchay Activities Index; GDS, Geriatric Depression Scale.
PF, Physical Functioning; RP, Role Physical; BP, Bodily Pain; GH, General Health;
VT, Vitality; SF, Social Functioning; RE, Role Emotional; MH, Mental health.

The scores of each subscale of SF-36 and correlations among related factors are shown on [Table 5]. All the subscales were negatively related with age and also showed low degree of correlation with education level. Moreover, all the sub-scales showed very low degree of correlation with BI and FAI. Depression, however, is highly related with GH, VT and MH among subscales of SF-36 and showed about 0.3 correlation with other subscales.

Finally, to find out the factors that affect health related quality of life, the regression analysis was conducted under the condition that the dependent variables was total scores of SF-36 and independent variables were whether having comorbid chronic diseases or not, gender, whether living alone or with family members, education level, FAI, BI, and total score of GDS(Stepwise). In results, three models were derived from the results of the regression analysis, which is shown on [Table 6]. According to Model 3, the GDS, whether having comorbid chronic diseases or not and basic activities of daily living in order were found to significantly affect the quality of life. Moreover, it was found that 50% of factors to affect the quality of life can be explained only with these three factors.

Tab 6. Results of Regression analysis (Stepwise)

Model		B	S.E.	Beta	t	p	R²
1	(Constant)	630.79	11.60		54.39	0.00	0.327
	GDS	-18.07	1.50	-0.57	-12.01	0.00	
2	(Constant)	710.48	13.26		53.59	0.00	0.482
	GDS	-13.73	1.40	-0.43	-9.80	0.00	
	Chronic disease	-143.44	15.26	-0.42	-9.40	0.00	
3	(Constant)	356.46	106.94		3.33	0.00	0.501
	GDS	-13.19	1.39	-0.42	-9.51	0.00	
	Chronic disease	-140.10	15.04	-0.41	-9.31	0.00	
	BI	3.54	1.06	0.14	3.34	0.00	

Ⅳ. Discussion

The health-related quality of life is a qualitative living value an individual recognizes in close relation to heath. Recently, it is reported that the value of the qualitative living from 16 to 60 years old shows no visible change, but sharply decreases in the elderly more than 60 years old, which is a factor that may cause a social problem[16][17]. In South Korea where social security system, such as old age pension as income security- has been yet fully established, the rapid aging of population causes problems and requires measures to solve those problem in the future.

This study showed that depression, comorbid chronic diseases and basic activities of daily living lowered the health-related quality of life of community-dwelling elderly people. The study newly

reported that the health related quality of life could be lowered more by the combination of comorbid chronic diseases and low basic activities of daily living with depression. According to the previous studies, depression lowers the health related quality of life comparing to the comorbid chronic diseases[12][18].

However, this study has significant meaning, for it was conducted for community-dwelling elderly people with depression, comorbid chronic diseases and low degree of basic activities of daily living, which is different from previous studies that focused on clinical subjects or adults. In other words, this study is the first paper to suggest that the health-related quality of life of community dwelling elderly people is lowered by depression, comorbid chronic diseases and low basic activities of daily living in South Korea.

This study found out that the depression is prevalent among community dwelling elderly people. According to the GDS assessment, 45.2% (n = 172) of the elderly had depression (GDS 6 or higher). This study has limitations in expanding its results to all the elderly in South Korea, but it definitely proved that the elderly have not been provided with proper diagnoses and treatments related to mental health and, on the contrary, that the possibility of a social problem like suicide has been enhanced. To solve such problems, it is necessary to first diagnose whether the elderly with comorbid chronic diseases have depression and then to have them managed by treatment organizations.

Also, it was found that female elderly people have significantly serious depression and low basic activities of daily living comparing with male elderly people, which could be explained with several factors. As for the female subjects of this study, the mean age of female subjects was higher than that of male subjects, but the education level of female subjects was lower than that of male subjects, which suggests more elaborate research, for it is assumed that these data show that the low quality of life of female elderly people may be closely related to depression.

Beside, in South Korea, the female elderly generation has struggled with low social status caused by patriarchal culture and, if their spouses pass away, they rapidly fall into economically difficult situation, for they have been economically dependent on their spouses. Moreover, the insufficient social security system makes it difficult to improve the quality of life of female elderly people. Therefore, it is necessary to make an in depth study of depression of female elderly people more than any other age groups

Furthermore, this study also evaluated the health related quality of life by age and education level as well as by depression, comorbid chronic diseases and basic activities of daily living and found out that, as age is higher and education level is lower, the quality of life tends to be lower. Therefore, it is suggested that the study on the health related quality of life by age and education level of the elderly should be carried out more deeply.

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저 자 소 개

김 명 화(Myung-Wha Kim)   정회원

- 1979년 2월 : 고려대학교 사범
  대학 체육교육과(이학사)
- 1983년 8월 : 고려대학교 일반
  대학원 체육과(이학석사)
- 1995년 2월 : 고려대학교 대학
  원 체육과(이학박사)
- 2004년 3월 ~ 현재 : 우송대학교 스포츠건강관리학
  과 부교수

<관심분야> : 운동처방, 노인건강관리