

What Influences Utilization of Senior Citizen Centers? Evidence from the 2017 National Survey of Older Koreans

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Abstract

Background Korea has envisioned an expansion of health and social welfare services for the elderly through community-based care. Accordingly, senior citizen centers are in operation. **Objective** This study aimed to assess the influence of socio-demographic factors, life satisfaction, and health status on the utilization of senior citizen centers by elderly Koreans. **Methods** A cross-sectional analytical study was conducted using secondary data from the 2017 National Survey of Older Koreans. Descriptive statistics were used to determine utilization patterns; and chi-square test, bivariate and multivariate logistic regression analyses were conducted at a 5% significance level to determine the factors associated with senior citizen center utilization. **Result** Of 10,299 elderly people, 21.7% were aged 80 or above, and 22.7% had visited a senior citizen centers in the past 12 months. The most common reasons for visiting was the desire for company, and more than 95% of the subjects were satisfied with the services provided. Regarding socio-demographic factors, those who were female (adjusted odds ratio (AOR) =1.20), older (AOR=3.94 for ≥ 80 years), illiterate (AOR=5.27), less educated, or from eup meon bu (AOR=6.42) were most likely to use senior citizen centers. Regarding the life satisfaction, those who experienced financial satisfaction (AOR=1.21), satisfaction with culture (AOR=1.49), and satisfaction with friends and society (AOR=4.24) had the higher odds of senior citizen center utilization. Higher odds of the senior citizen center utilization were observed for the elderly diagnosed with multiple diseases as compared to those who were disease free. **Conclusion** Socio-demographic factors, life satisfaction, and health status influence utilization of the senior citizen centers. Therefore, the government's community-based care strategy should take these factors into consideration.

Background

Korea is moving toward becoming a super-aged society. In 2017, more than 14% of Koreans were aged 65 or older. National survey of older Koreans reported that 57.7% of senior citizens were desirous of living out their remaining years in their own homes [1]. Accordingly, the Korean government has recently created a blueprint for expanding care services to seniors in their homes by 2025. This is being considered an alternative to medical institutions or nursing homes for seniors and dependent persons [2]. The community-based home health care project has shown improved service implementation for older adults [3].

The majority of the elderly evaluate their quality of life on the basis of social contacts, dependency, health, material circumstances, and social comparisons [4]. Health-related quality of life (HRQoL) is an important component of healthy aging. Aging does not have to influence quality of life negatively; rather, a long period of good quality of life in old age is possible. Therefore, quality of life improvement should be promoted in the elderly care program [4]. A previous study found that participants older than 80, males, and those with poor self-rated health were most likely to use primary care services or traditional Korean services [5]. This demonstrates that the elderly prefer community-based services. In addition, as the needs of the elderly population are numerous and complex, well-coordinated health services integrated with social welfare services are recommended [6]. Population aging, changing disease patterns and the

increase in the need for chronic disease management have led to an increased interest in the use of community-based care. According to a study conducted in a British city, understanding the determinants of the use of both statutory and private home care services is important because of the increasing numbers of elderly people in the population and the policy of allowing older people to remain in their own homes [7].

A study concluded that there is overreliance on inpatient care and unmet health care needs among long-term care users as a result of weak gatekeeping by primary care and a lack of effective coordination between health care and long-term care in Korea [8]. The prevalence of unmet health care needs in Korean elderly was found to be 17.4%, and people with visual, hearing, or memory impairment were more likely than others to report unmet health care needs [9]. With the rapid growth of the elderly population, it has been recommended that the government utilize existing senior centers for the implementation of the long-term care prevention program.

In Korea, senior citizen centers and senior welfare centers are the main venues for seniors to engage in leisure and cultural activities [1]. In addition, these centers, which are widely known in the community, offer programs and services that promote health and prevent disease [10]. Evidence from previous research involving comparisons with non-users shows that participation in senior center activities influences mental and physical health [10]. To cope with the burden of the health care needs of Korea's aging population, rather than investing in new infrastructure, strengthening existing senior centers might be a cost-effective and sustainable strategy. However, as the utilization of senior citizen centers can be associated with several factors, this study aimed to assess utilization patterns and the role of socio-demographic variables, life satisfaction, functional ability, and health status using data from the 2017 National Survey of Older Koreans, conducted by the Korea Institute for Health and Social Affairs.

Methods

2.1 Study design/study area/study population

A cross-sectional analytical study was conducted using secondary data from the 2017 National Survey of Older Koreans. The 2017 National Survey of Older Persons was conducted to gather the data necessary to devise policy measures to improve seniors' quality of life and better manage population aging [1]. The National Survey of Older Persons 2017 included all seniors aged 65 or older living in standard residential facilities or premises in 17 metropolitan cities and provinces across Korea. The sampling framework included the lists of apartment areas and non-apartment areas. The total survey areas listed were 934. The survey was conducted from June 12 to August 28, 2017 [1].

2.2 Data collection methods

The National Survey of Older Persons involved in-person interviews with 10,299 seniors aged 65 or from June 12 to August 28, 2017. The survey was conducted by 60 trained surveyors (divided into 15 teams of four surveyors, each with one supervisor) [1]. Surveyors checked the answered questionnaires for any omissions and errors and relayed their feedback to the research team. The answered questionnaires, so checked, were digitalized over a 20-day span by an external agency. The digitalized data were verified and checked for input errors, incorrect IDs and categories, and logic and arithmetic errors over two months [1].

2.3 Measurement of the variables

2.3.1 Dependent variable

Utilization was determined by the question “Have you visited a National Survey of Older Persons or community center for the elderly in the last one year?” The response “yes” was coded “1” and “no” “0.”

2.3.2 Independent variables

Sociodemographic variables: Questions on gender, age, marital status, number of family members, residential area, and employment status were asked to determine the sociodemographic situation.

Number of diseases present: The questions covered 32 chronic diseases, including the option of “others,” that subjects had been suffering from for more than three months after diagnosis. To calculate the prevalence of multiple diseases, all items were summed up and categorized as “no disease”, “one disease”, “two diseases,” and “more than two diseases.”

Life satisfaction: The question “To what extent are you satisfied with the following aspects of your life” was asked for health status, economic status, relationship with spouse, relationship with children, leisure and cultural activities, and relationships with friends and society. The response options were: 1 = very satisfied, 2 = satisfied, 3 = average, 4 = not satisfied and 5 = not satisfied at all.

2.4 Data Analysis

SPSS version 24.0 was used for data analysis. Descriptive statistics were calculated; and the chi-square test and multivariate logistic regression were conducted at a 5% level of significance. Adjusted odds ratios and 95% confidence intervals were computed. The Hosmer-Lemeshow test was conducted to determine model fit. Model 1 comprised socio-demographic variables while Model 2 consisted of all Model 1 variables along with life satisfaction, functional ability, and number of diseases.

Result

At 42.5%, about three-fourth of the study population was male. The proportion of the population that lived alone was 23.6%. Regarding age, 32.4% were in the age group of 65 to 69 years and 21.7% were 80 and above. Of the total population, 30.3% were employed. Regarding marital status, 63.4% were currently married, 31.5% were widows/widowers, and 5.1% were separated, divorced, or had never been married. Regarding the place of residence, 68.6% were from dong-bu and 31.4% from eup, meon, bu (Table 1).

Of the total population, 22.7% had used a senior citizen centers at least once in the last 12 months. The average number of visits in a week was 3.91 (SD \pm 2.24). Among those who visited senior citizen centers, the main reason for doing so was a desire for company (63.2%), followed by 25.1% who visited in order to get dinner, and 5.4% who wished to engage in a health promotion activity. Of the total population, 81% were very satisfied or satisfied with the services provided. Only 3.1% of the population was not satisfied. Of the total population, 36.0% intended to use these services in the future. Regarding elderly welfare centers, only 9.1% of the subjects used these services in a year (Table 2).

Of the total population, 59.1% had been diagnosed with hypertension, which was the main chronic disease. The second, third, and fourth most common chronic diseases were hyperlipidemia, lumbago and sciatica, and diabetes at 29.2%, 23.9%, and 23.3%, respectively. Of the study population, 13.0% were diagnosed as having osteoporosis. Of the total, only 10.3% were disease free and 51.4% population had multiple health problems (Table 3).

There was a significant association between gender and senior citizen center utilization among females in contrast to males. Age group, marital status, educational level, residence, number of family members, and number of diseases present were also significantly associated with senior citizen center utilization. There was a significant association between life satisfaction variables and community center utilization (Table 4).

In the adjusted logistic regression model, being female, increasing age of elderly, no education or lower education, being widow/widowers, having current employment and living in rural area were significantly associated with increased odds of senior citizen center utilization. Regarding life satisfaction and health status, satisfaction with financial condition, satisfaction with leisure and culture, satisfaction with friends and society, functional ability and presence of multiple diseases were also significantly associated with higher likelihood of senior citizen center utilization. In the crude analysis, most of the chronic conditions had higher odds of visiting the center except being diagnosed with cancer. However, these variables were not included in the adjusted model due to the significant and high correlation with the number of disease. The factors of model 1 and model 2 predicted 32% and 37% of the utilization of the center (Table 5).

Discussion

This study aimed to determine senior citizen center utilization and the associated factors based on data from the 2017 National Survey of Older Koreans. Utilization was found to be relatively low, and the associated factors were socio-demographic variables, life satisfaction, and health status. Of the total

study population, 22.7% had visited a senior citizen centers or community center for the elderly in the last 12 months, with an average of 3.9 visits per week. Regarding social welfare centers, 9.1% had visited at least once in the last 12 months, with an average of 2.5 visits a week. In Korea, senior citizen centers and senior welfare centers are the main venues where seniors engage in leisure and cultural activities [1]. Desiring company was the foremost reason for visiting senior citizen centers (63.2%), followed by the availability of meals (25%) and health programs (5.4%). Thus, expanding the scope of senior citizen center to ensure better health and welfare might have a positive impact on the health of senior citizens.

Senior citizen center utilization was significantly associated with socio-demographic variables such as gender, age group, educational level, residential place, marital status, and employment status. There was a significant association between gender and senior citizen centers utilization, with females more likely to visit them. Another study conducted among older adults in Korea also found a significantly higher number of females to be using senior citizen centers [11]. Regarding education, there was a reverse association with the center utilization: the higher their level of education, the less likely subjects were to visit senior citizen centers. In contrast to the present results, a study by Kim et al. (2012) found a positive association between education and senior center utilization among older adults in Korea [11]. The present study also revealed that seniors involved in some form of employment had higher odds of the center utilization.

Family support and family relations appeared to be important factors affecting senior citizen center utilization. In Model 1, all married people including widows/widowers more likely to visit senior citizen centers than the unmarried. After adjusting the model with all explanatory variables in Model 2, the odds of visiting senior citizen centers were significantly higher among widows/widowers than the never married/separated/divorced. It was also evident that subjects with higher family support were more likely to visit senior citizen centers. Senior citizen center utilization in Korea is affected by support from family and friends [11]. People usually wish to be at home near death. Living alone, a lack of visits by relatives or acquaintances, dissatisfaction with the place of residence, and being fully dependent in daily activities were determined to be factors that increased the level of loneliness. Elderly people who are alone and dependent in activities of daily living should be monitored closely [12]. A survey conducted among adults in Alberta revealed that 70.8% preferred to be at home near death, 7.0% wished to be in a hospital, and 1.7% wanted to be in a nursing home [13]. The evidence also suggests that the home health care program is economical [14]. Now, home care nursing intervention programs customized to patients' family function and daily activities are required [15].

The ultimate goal of the government long term care insurance policy is to provide home- and facility-based support to seniors with geriatric diseases and dementia, as well as to reduce the support burden on other family members [16]. Good financial condition was highly associated with successful aging. The study suggests that the advancement of the public health system could help control the progression of non-communicable diseases among old people and thus promote successful aging [17]. Satisfaction with long term care services was higher among those at home than those in nursing homes among low-income Korean elderly adults [18]. Clustering of healthy lifestyles, especially among older males, supports

the potential benefits of a multiple behavior change approach. Health promotion efforts should target the socially disadvantaged and functionally compromised segment of the older population [19]. Thus, community-based integrated care for the health and welfare of senior citizens may reduce government spending on hospital-based care and improve the quality of life of the elderly in Korea.

As the study included data from the national survey among older Koreans, the findings may well represent the Korean population, however it has some limitations. First, due the unique socio-cultural context of Korean elderly population, the findings may not be applicable in other study settings where senior citizens centers are not conceptualized as they were in South Korea. Second, as the study was cross-sectional, causal inferential could not be made.

CONCLUSION

This study revealed that 22.7% of the elderly had visited a senior citizen center in the last 12 months and that more than 95% were satisfied with the services they had received. Elderly females were 20% more likely to utilize a senior citizen enters as compared to males. The older the participants were, the more likely they were to visit a senior citizen centers. The odds of visiting senior centers were also higher among those with low educational levels. Residential area was also significantly associated with the odds of visiting a senior citizen center, with participants from eup meon bu 6.42 more likely than others to visit them. The employed elderly were 1.73 times more likely than the unemployed to visit a senior citizen center. Financial satisfaction, cultural satisfaction, and satisfaction with friends and society were also associated with increased odds of visiting a senior citizen center. Higher odds of senior citizen center utilization were observed for the elderly diagnosed with multiple diseases. Subjects who did not require help in performing daily activities were also more likely to visit a senior citizen center than those who did. This showed that being diagnosed with a disease, and especially so in the case of multiple diseases, led the elderly to visit a senior citizen center until they were unable to perform daily activities. Socio-demographic factors, life satisfaction, and health status affect community center utilization. Therefore, the governmental strategy of providing community-based care should take these factors into consideration.

Abbreviations

AOR: Adjusted Odds Ratio; CI: Confidence Interval; SPSS; Statistical Package for Social Science

Declarations

Ethical approval and consent to participate

The data used in this study were collected by the Korea Institute for Health and Social Affairs as a part of the 2017 National Survey of Older Koreans. Therefore, independent ethical clearance for this study was not required. Consent for the use of data was obtained from Ministry of Health and Welfare.

Consent to publish: Not applicable

Availability of data and materials: The study used secondary data from the 2017 National

Survey of Older Koreans. The data were accessed from Health and Welfare Data Portal of Korean government (https://data.kihasa.re.kr/micro/subject_view.jsp?WT.ac=favor_data&grp_seq=&project_seq=673)

Competing Interest: Authors declare no competing interest.

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Authors' contributions: BS conceptualized study design, did data analysis and prepared draft manuscript. GS contributed to access and manage the data, to design the study and to revise and interpret of the result. EN involved in the study design and critically revised the manuscript. All authors read and approved the manuscript.

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References

1. Chung, K. 2017 National Survey of Older Koreans. Korea Institute for Health and Social Affairs. 2018 (survey report)
2. Kim H. South Korea to expand caregiving to seniors in their homes. Yonhap, Nov. 20, 2018. Retrieved from: <https://en.yna.co.kr/view/AEN20181120006951320>
3. Lee, T. Community-based home healthcare project for Korean older adults. *Osong Public Health and Research Perspectives*, 2013; 4(5), 233-239.
4. Netuveli, G., & Blane, D. Quality of life in older ages. *British Medical Bulletin*, 2008; 85(1), 113-126.
5. Park, J. M. Health status and health services utilization in elderly Koreans. *International Journal for Equity in Health*, 2014; 13(1), 73.
6. Ahn, Y. H., & Kim, M. J. Health care needs of elderly in a rural community in Korea. *Public Health Nursing*, 21(2), 2004; 153-161.
7. Stoddart, H., Whitley, E., Harvey, I., & Sharp, D. What determines the use of home care services by elderly people? *Health & Social Care in the Community*, 2002; 10(5), 348-360.
8. Jeon, B., & Kwon, S. Health and long-term care systems for older people in the Republic of Korea: Policy challenges and lessons. *Health Systems & Reform*, 2017; 3(3), 214-223.

9. Kim, Y. S., Lee, J., Moon, Y., Kim, K. J., Lee, K., Choi, J., & Han, S. H. Unmet healthcare needs of elderly people in Korea. *BMC Geriatrics*, 2018; 18(1), 98.
10. Kim, H. S., Harada, K., Miyashita, M., Lee, E. A., Park, J. K., & Nakamura, Y. Use of senior center and the health-related quality of life in Korean older adults. *Journal of Preventive Medicine and Public Health*, 2011; 44(4), 149.
11. Kim, H. S., Miyashita, M., Harada, K., Park, J. H., So, J. M., & Nakamura, Y. Psychological, social, and environmental factors associated with utilization of senior centers among older adults in Korea. *Journal of Preventive Medicine and Public Health*, 2012; 45(4), 244.
12. Hacıhasanoğlu, R., Yildirim, A., & Karakurt, P. Loneliness in elderly individuals, level of dependence in activities of daily living (ADL) and influential factors. *Archives of Gerontology and Geriatrics*, 2012; 54(1), 61-66.
13. Wilson, D. M., Cohen, J., Deliens, L., Hewitt, J. A., & Houttekier, D. The preferred place of last days: results of a representative population-based public survey. *Journal of Palliative Medicine*, 2013; 16(5), 502-508.
14. Lee, E., & Kim, J. Economic effect of home health care services for community-dwelling vulnerable populations. *Journal of Korean Academy of Nursing*, 2016; 46(4), 562-571.
15. Yang, J. O., & Lee, H. K. Factors influencing burnout in primary family caregivers of hospital-based home care patients. *Journal of Korean Academy of Community Health Nursing*, 2018; 29(1), 54-64.
16. Kim, S. H., Kim, D. H., & Kim, W. S. Long-term care needs of the elderly in Korea and elderly long-term care insurance. *Social Work in Public Health*, 2010; 25(2), 176-184.
17. Feng, Q., Son, J., & Zeng, Y. Prevalence and correlates of successful ageing: a comparative study between China and South Korea. *European Journal of Ageing*, 2015; 12(2), 83-94.
18. Kwak, C., Lee, E., & Kim, H. Factors related to satisfaction with long-term care services among low-income Korean elderly adults: A national cross-sectional survey. *Archives of Gerontology and Geriatrics*, 2017; 69, 97-104.
19. Lee, Y., Back, J. H., Kim, J., Byeon, H., Kim, S., & Ryu, M. Clustering of multiple healthy lifestyles among older Korean adults living in the community. *Geriatrics & Gerontology International*, 2012; 12(3), 515-523.

Tables

Table 1. Characteristics of the study population (N=10299)

	Variables	Number/mean (SD)	Percentage
Gender	Male	42.5	42.5
	Female	57.5	57.5
Age group (in years)	65-69	3332	32.4
	70-74	2560	24.9
	75-79	2176	21.1
	≥80	2231	21.7
No. of family members	1	2426	23.6
	2	5749	55.8
	3	1247	12.1
	≥4	876	8.5
Employment status	Employed	3120	30.3
	Unemployed	7179	69.7
Marital status	Currently married	6525	63.4
	Widow/widower	3244	31.5
	Divorced/separated/single	529	5.1
Educational level	No formal education	2494	24.2
	Elementary school	3514	34.1
	Middle and high school	3515	34.1
	University education	775	7.5
Residential area	동부(dong-bu)	7067	68.6
	읍, 면, 부(eup, meon, bu)	3232	31.4

Table 2. Utilization of senior citizen centers by the elderly population

Variables	Number	Percentage/mean
Use in the last 12 months		
Yes	2339	22.7
No	7895	76.7
Missing	64	.6
Average number of visits in a week	2339	3.91 (± 2.24)
Reason for visiting (n=2319)		
Friendship	1466	63.2
Access to dinner	583	25.1
Health promotion program	126	5.4
Hobby/leisure program	93	4.0
Others	51	2.2
Satisfaction level		
Very satisfied	249	10.7
Satisfied	1630	70.3
Neutral	368	15.9
Not satisfied	72	3.1
Want to use in future		
Yes	3705	36.0
No	6369	61.8
Missing	226	2.2
Elderly welfare center visit in last 12 months		
Yes	937	9.1
No	9297	90.3
Missing	64	.6
Number of visit peer week	937	2.50 (1.57)

Table 3. Prevalence of chronic diseases and life satisfaction

Variables	Number	Percentage
<i>Diagnosed health condition</i>		
Hypertension	6083	59.1
Osteoarthritis or rheumatoid arthritis	3415	33.2
Hyperlipidemia	3009	29.2
Lumbago and sciatica	2467	23.9
Diabetes	2395	23.3
Myocardial infarction and other heart diseases	1398	13.5
Osteoporosis	1338	13.0
Cataract and glaucoma	990	9.7
Stomach and duodenal ulcers	942	9.2
Prostate enlargement	912	8.9
Stroke	769	7.5
Cancer	391	3.8
Depression	321	3.1
Dementia	244	2.4
Number of diseases present		
0 diseases	1061	10.3
1 disease	1688	16.4
2 diseases	2261	22.0
≥2 diseases	5289	51.4
<i>Life satisfaction</i>		
Health-related		
Satisfied	6152	59.7
Dissatisfied	3922	38.1
Missing	226	2.2
Financial		
Satisfied	6521	63.3
Dissatisfied	3552	34.5
Missing	226	2.2
Relationship with spouse		
Satisfied	5984	58.1
Dissatisfied	420	4.1
Missing	3895	37.8
Relation with children		
Satisfied	9182	89.2
Dissatisfied	657	6.4
Missing	460	4.5

Leisure and Culture related		
Satisfied	8069	78.3
Dissatisfied	2005	19.5
Missing	226	2.2
Society and friend related		
Satisfied	8896	86.4
Dissatisfied	1177	11.4
Missing	226	2.2

Table 4. Association between senior citizen center utilization and explanatory variables

Variables	Senior citizen center utilization		Chi-square value	P value
	No	Yes		
<i>Socio-demographic variables</i>				
Gender				
Male	3557 (81.7)	798 (18.3)	88.289	<0.001
Female	4338 (69.6)	1541 (26.2)		
Age group				
65-69	2885 (86.8)	440 (13.2)	384.879	<0.001
70-74	2039 (79.8)	517 (20.2)		
75-79	1509 (69.6)	660 (30.4)		
≥80	1462 (66.9)	723 (33.1)		
Educational status				
No formal education	1499 (61.1)	955 (38.9)	715.215	<0.001
Elementary school	2596 (74.2)	904 (25.8)		
Middle and high school	3077 (87.8)	429 (12.2)		
University education	723 (93.3)	52 (6.7)		
Marital status				
Married	5204 (80.0)	1298 (20.0)	198.655	<0.001
Widow/widower	2214 (69.1)	989 (30.9)		
Divorced/separated/single	477 (90.2)	52 (9.8)		
Number of family members				
1	1690 (69.7)	736 (30.3)	123.35	<0.001
2	4475 (78.2)	1251 (21.8)		
3	1027 (83.9)	197 (16.1)		
≥4	704 (82.0)	155 (18.0)		
Place of residence				
동부(dong-bu)	6225 (88.6)	800 (11.4)	1671.464	<0.001
읍, 면, 부(eup, meon, bu)	1671 (52.0)	1540 (48.0)		
<i>Life satisfaction</i>				
Health-related				
Satisfied	4787 (77.8)	1365 (22.2)	6.16	0.013
Dissatisfied	2968 (75.7)	954 (24.3)		
Finance-related				
Satisfied	4939 (75.7)	1582 (24.3)	15.99	0.000
Dissatisfied	2815 (79.3)	737 (20.7)		
Relationship with spouse				

Satisfied	4787 (80.0)	1197 (20.0)	1.66	.197
Dissatisfied	325 (77.4)	95 (22.6)		
Relationship with children				
Satisfied	6990 (76.1)	2191 (23.9)	25.64	0.000
Dissatisfied	557 (84.8)	100 (15.2)		
Culture-related				
Satisfied	6037 (74.8)	2032 (25.2)	107.05	0.000
Dissatisfied	1718 (85.7)	287 (14.3)		
Friends and society-related				
Satisfied	6651 (74.8)	2245 (25.2)	210.60	.000
Dissatisfied	1103 (93.7)	74 (6.3)		
<i>Functional Ability</i>				
Help needed in daily activities				
No	7329 (76.7)	2225 (23.3)	15.46	<0.001
Yes	567 (83.3)	114 (16.7)		
<i>Health status</i>				
Number of diseases				
0	918 (86.6)	142 (13.4)	94.49	<0.001
1	1342 (79.9)	338 (20.1)		
2	1757 (78.3)	488 (21.7)		
≥3	3878 (73.9)	1372 (26.1)		

Table 5. Factors associated with senior citizen center utilization

Variables	COR	P value	Model 1		Model 2	
<i>Sociodemographic variables</i>			AOR	P value	AOR	P value
Gender (ref: male)	1.58 (1.43-1.74)	<0.001	1.30 (1.14-1.48)	<0.001	1.20 (1.05-1.38)	.008
Age group (ref: 65-69 years)						
70-74	1.66 (1.44-1.91)	<0.001	1.83 (1.56-2.142)	<0.001	1.84 (1.56-2.16)	<0.001
75-79	2.86 (2.50-3.28)	<0.001	2.92 (2.49-3.42)	<0.001	2.95 (2.50-3.48)	
≥80	3.24 (2.83-3.70)	<0.001	3.39 (2.86-4.01)	<0.001	3.94 (3.30-4.71)	<0.001
Educational status (ref: university education)						<0.001
No formal education	8.91 (6.64-11.96)	<0.001	4.32 (3.14-5.94)	<0.001	5.27 (3.80-7.30)	<0.001
Elementary school	4.87 (3.63-6.52)	<0.001	3.05 (2.23-4.15)	<0.001	3.40 (2.48-4.67)	<0.001
Middle and high school	1.95 (1.44-2.63)	<0.001	1.684 (1.22-2.30)	0.001	1.80 (1.30-2.47)	<0.001
Marital status (ref: other*)						
Married	2.27 (1.70-3.04)	<0.001	1.69 (1.23-2.327)	<0.001	1.37 (.96-1.94)	.080
Widow/widower	4.07 (3.03-5.47)	<0.001	2.02 (1.46-2.81)	<0.001	1.61 (1.12-2.32)	.009
Employment (ref: no)	2.01 (1.82-2.21)	<0.001	2.09 (1.85-2.36)	<0.001	1.97 (1.73-2.23)	<0.001
Place of residence (reference: dong-bu)			6.19 (5.54-6.90)	<0.001	6.42 (5.72-7.20)	<0.001
Life satisfaction (ref: dissatisfied)						
Health satisfaction	0.88 (0.80-0.91)	.013			.99 (.87-1.13)	.980
Financial satisfaction	1.22 (1.10-1.35)	<0.001			1.21 (1.06-1.37)	.003
Satisfaction with	1.74	<0.001			1.23	.112

relationship with children	(1.40-2.17)		(.95-1.60)	
Cultural satisfaction	2.01 (1.76-2.30)	<0.001	1.49 (1.24-1.79)	<.001
Satisfaction with friends and society	5.00 (3.94-6.36)	<0.001	4.24 (3.17-5.66)	<.001
Functional ability				
Help needed for daily activities (ref: no)	0.66 (0.53-0.81)	<0.001	1.45 (1.10-1.91)	.007
Health status				
Number of diseases present (ref: 0)			1.55 (1.21-1.99)	<0.001
1	1.62 (1.31-2.01)	<0.001	1.60 (1.26-2.03)	<0.001
2	1.79 (1.46-2.20)		2.01 (1.60-2.53)	<0.001
≥2	2.28 (1.89-2.76)			
Hypertension (ref: no)	1.29 (1.17-1.42)	<.0001		
Osteoarthritis or rheumatoid arthritis (ref: no)	1.58 (1.43-1.73)	<.0001		
Osteoporosis (ref: no)	1.71 (1.51-1.94)	<.0001		
Lumbago, sciatica (ref: no)	1.72 (1.55-1.90)	<0.001		
Cancer (ref: no)	0.75 (.58-.98)	0.037		
Stomach and duodenal ulcers (ref: no)	1.29 (1.11-1.50)	.001		
Nagelkerke R Square			.320	.375
Hosmer-Lemeshow test (P value)			.061	.627

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [STROBEchecklistcrosssectionalfilled.doc](#)