Research Article

Multilevel Effects of Community Capacity on Active Aging in Community-Dwelling Older Adults in South Korea☆

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ABSTRACT

Purpose: This study aimed at identifying the level of active aging in older adults and the influence of the individual and community levels of community capacity on active aging.
Methods: A cross-sectional survey was conducted on a stratified sample of 380 older adults living in 35 neighborhoods of five regions in Seoul, the capital of South Korea. The structured questionnaire included the Korean version of instruments that measure active aging and community capacity at the individual level. Secondary data including metropolitan statistical information, a public data portal, and a city plan were used to acquire community-capacity factors at the community level. Data were analyzed with multilevel models.
Results: The overall active aging mean score was 3.00 ± 0.55 out of 5; the highest mean score was in the security domain (3.46 ± 0.65) and the lowest one was in the participation domain (2.71 ± 0.66). Individual factors associated with active aging included age, education, income, and community capacity at the individual level. At the community level, two community-capacity factors (senior leisure welfare facilities and cooperative unions) were significantly associated with active aging. In active aging, 6.4% and 4.1% of total variance could be explained by 35 neighborhoods, after considering individual and community level variables, respectively.
Conclusion: This study showed that community capacity is important for active aging among older adults. Appropriate strategies that consider both individual and community factors, such as contextual indicators of community capacity, are necessary to improve active aging.

Introduction

Active aging is the process of ensuring necessary health, social participation, and safety opportunities to maintain a high quality of life in old age [1]. Active aging allows individuals to realize their potential for physical, mental, and social well-being and participate in society while receiving appropriate protection and care [1]. It also empowers individual abilities and fosters participation in activities that contribute to happiness [2]. Being "active" means "continuing participation in social, economic, cultural, spiritual, and civic affairs, not just the ability to be physically active or to participate in the labour force" [1]; active aging emphasizes health, autonomy, and independence during the aging process [1,3].

In recent years, based on the concept of active aging, national and international strategies have worked to raise older adults' health and participation levels and highlight their potential [3]. Individual health habits and sociocultural, situational, and environmental influences affect health [4]. The World Health Organization (WHO) [1] identifies five types of factors that relate to health and social services (e.g., health-promotion and therapeutic, long-term care, and mental health services): behavioral (e.g., smoking,

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physical activity, diet, and oral health), social (e.g., social support and education), economic (e.g., income, social protection, and labor), physical environment, and personal factors (e.g., biological, genetic, and psychological factors).

Community capacity is also closely related to health and it is increasingly becoming an important strategy for health promotion [4]. Community capacity is defined as the interaction of human capital, organizational resources, and social capital within a community, which can be used to solve the population's problems and improve or sustain the community well-being through informal social processes and systematic efforts [5]. Community capacity can be categorized into individual, organizational, and community capacities [6], or individual and community level capacities [7]. Individual level community capacity involves community participation, leadership, connections, sense of place, community attitudes, and problem assessment [8]. It also includes community satisfaction, which means that people experience a sense of community [7]. Previous studies have attempted to identify the relationship between individual-level community capacity and self-rated health [7,9]. Community satisfaction was related to self-rated health [7]. At the community level, community capacity refers to a community's infrastructure and resources to solve problems or achieve common goals, in this case: to improve community health, social conditions, well-being, and quality of life to solve problems or achieve common goals.

There is more community-based participatory research on community competencies, which allows community members to participate equally as partners in the research design, address health care gaps, and improve community health [10]. As active aging emphasizes the autonomy and independence of older people in the community at the individual level, it is necessary to examine the community capacity to create a supportive environment to improve active aging.

The conceptual framework of this study (Figure 1) was adopted and modified from the "Community capacity for mobilization: a theoretical framework" [7] and "The determinants of active ageing" [1]. This framework assumes that active aging is related to community capacity at both individual and community levels as well as socioeconomic position. The individual level capacity includes the community-dwelling population's ability to foster individual and community capacity. Based on literature reviews, the community level capacity includes community organization and resources

[6,7]. The older adult population is diverse and requires more than just passive services and support [11]. Nurses in primary health care settings have to understand the needs of older adults in the community and assess both their health priorities and the barriers to creating an age-friendly community environment [12]. However, for older people in the community, the health care system mainly focuses on disease treatment and physical health; it lacks a holistic approach that considers physical, social, and environmental factors [13]. In recent years, there has been a growing emphasis on the need to build health care systems that support community participation and intervention to foster healthy aging and improve community health [13]. Prior to planning a health-promotion program, it is important to assess the capacity of the community, individual health risks, and health needs [4]. However, few empirical studies on how community capacity affects active aging in older adults exist.

This study examined the relevance of community capacity factors associated with active aging at the individual and community levels. It provides a theoretical basis for improving active aging through community capacity. It identified the level of active aging in older adults and examined how community capacity affects active aging at the individual and community levels.

Methods

Study design

This study conducted descriptive research, which examined different levels of individual and community factors, to identify the relationships between active aging and community capacity.

Sample and setting

Adults aged 65 years and above participated in this study. The selection criteria included the ability to communicate, lead a normal daily life, demonstrate mobility, and provide informed consent.

To produce statistical power greater than 0.8 with a medium effect size, multilevel analysis requires a minimum of 10 samples from 35 level 2 groups with a minimum sample size of 350 [14]. This study randomly selected 35 neighborhoods, which are a sub-level administrative unit consisting of 3—5 "dong" in Seoul city
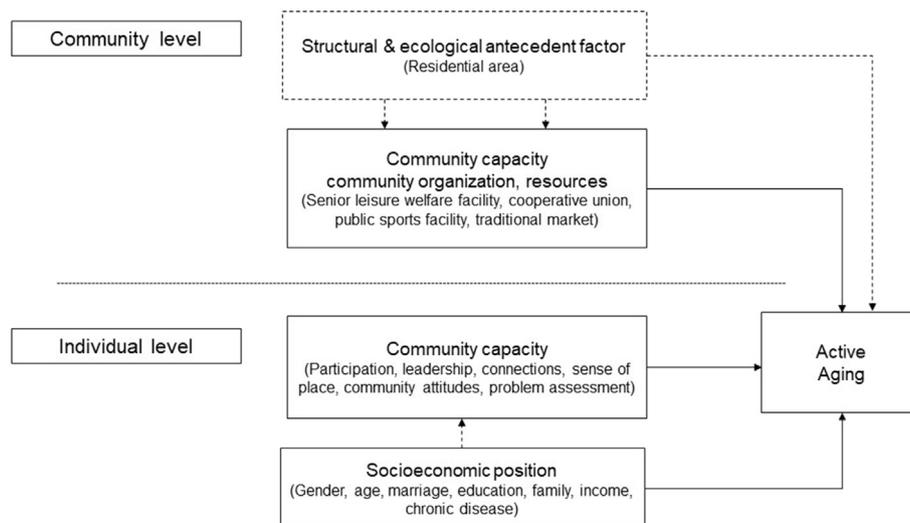

Figure 1. Conceptual framework. Note. →: applied to this study.

through stratified sampling and randomly selected 7 neighborhoods per region (total 5 regions in the city). We selected senior citizens' centers in the neighborhoods randomly and explored the possibility of data collection; the consenting center was then sampled. Additionally, 10 to 11 older adults were sampled from the senior citizens' center of each neighborhood. A total of 380 respondents were selected. The senior citizens' center is the most common and easily accessible leisure welfare facility for older adults [15].

Ethical considerations

The Institutional Review Board of the Yonsei University health system reviewed and approved this research (Approval no. Y-2017-0112). Informed consent was obtained from all participants.

Measures

The measures consisted of 51 active aging items, 26 community capacity items at the individual level, participants' general characteristics, and a structured health-related characteristics questionnaire.

Active aging
The active aging scale was modified with the permission of the original author [16]. The scale measures three subcategories—personal participation, health, and safety—to study older adults' activity. These subcategories include a total of 51 items: 30 participation items, 13 health items, and 8 safety items. The Cronbach α values at scale development were .89 (participation), .79 (health), and .62 (safety). In this study, the overall Cronbach α for the scale was .91, with .89 for participation, .85 for health, and .65 for safety.

Community capacity (individual level)
Individual level community capacity was measured using the Community Capacity Instrument developed by Lovell, Gray, and Boucher [8], which was translated into Korean with the approval of the original developer. The Community Capacity Instrument consists of 26 items, which cover participation, leadership, connections, sense of place, community attitudes, and problem assessment.

Participation in the community capacity subdomain implies supporting the local school, participating in community events, and investing money or time for community development in a community organization to which one belongs. Leadership refers to the leadership of local leaders and possibility of access to leaders. Connections refer to the degree of trust among local residents and their relationships with others. Sense of place refers to a certain familiarity with the history of the region and an affinity for the place. Community attitudes indicate how positive attitudes are in relation to the community and the future. Problem assessment refers to communicating in order to solve problems.

The committee translation approach was used to translate the original instrument into Korean [17,18]. Committee translation methods use the consensus of collaboration and translation to reduce cultural prejudice against the original meaning [18]. The translation committee included four nursing professors who were fluent in Korean and English and had expertise in society and culture. Three of the four members independently translated the Community Capacity Instrument. Three translation team members and one researcher discussed the three translated versions to ensure that the original meaning did not change and the tool was properly translated. Through discussion, researchers revised "community" to "our neighborhood" and "people" to "residents" in

accordance with Korean culture. To derive the final version, the fourth member reviewed the proposed translation through discussion with the committee. This was supervised by a person who specialized in Korean literature.

Each question is rated on a seven-point Likert scale: the higher the score of the question after conversions of inverse questions, the higher the community capacity. During the instrument's development, the Cronbach α was .88 and it was .85 in this study.

Community capacity (community level)
At the community level, community capacity refers to the community's infrastructure and resources to improve the health and quality of life of community members [6]. The context of community capacity is how resources are used to achieve intended outcomes, focusing on the effectiveness and sustainability of programs and services. It also considers the resources and inputs for activities—such as financial capital, human capital, social capital, etc.—and represents the existence and distribution of infrastructure at the community level [6]. Composite indices are recommended when using information to summarize or highlight complex or multidimensional data [19]. Composite indicators may be used by global organizations to compare national human development indices or measure social characteristics or subjective health [20].

This study applied the method of composite index composition used by the Organization for Economic Cooperation and Development (OECD), which effectively summarizes multidimensional data and makes it easy to interpret separate variables [21]. The OECD composite index consists of 10 steps [21]. In this study, composite indicators were constructed by applying the five steps (theoretical framework, data selection, imputation of missing data, multivariate analysis, and normalization) required for research purpose and analysis methods.

Following the conceptual framework (Figure 1) and literature review [6,7,15,22], the community level community capacity was selected for numerous senior leisure welfare facilities, cooperative unions, public sports facilities, and traditional markets that provide infrastructure and resources to the local community. Based on prior research [6,15,22], the contextual aspects (senior leisure welfare facilities and cooperative associations) of participation and cooperation to achieve common goals were distinguished from the spatial and structural resources (public sports facilities and traditional markets) where local residents develop a sense of community and belonging.

The senior leisure welfare facilities provide programs and services, and elderly people can gather at these facilities to form community capacity through their social relations, social support, and participation [23,24]. Cooperative unions play a role in active aging as an organization established to solve the problems faced by the local community [25]. In addition, public sports facilities and the traditional markets are conceptual spatial resources in the local community [26,27].

The data were obtained from the existing administrative (statistical) data and included the number of senior citizens (aged 65 years and above), welfare facilities [28], public sports facilities [28], traditional markets [29], and cooperative unions [30]. The composite index was calculated as two groups: (1) resource and (2) shared interests and collaboration context.

General and health-related characteristics
General and health-related characteristics were examined with 10 items on age, sex, income, education, marital status, family, health care insurance, residential area, residence period, and chronic disease.

Table 1 Demographic Characteristics (N = 380).

Characteristics	Categories	n (%)	M ± SD
Gender	Men	142 (37.4)	
	Women	238 (62.6)	
Age (yrs)	65–74	73 (19.2)	80.13 ± 6.55
	75–84	206 (54.2)	
	≥85	101 (26.6)	
Marital status	Married	203 (53.4)	
	Widowed	170 (44.8)	
	Single/Divorced	7 (1.8)	
Living	With family	269 (70.8)	
	Alone	111 (29.2)	
Education	None	65 (17.1)	
	Elementary school	124 (32.6)	
	Middle school	73 (19.2)	
	≥High school	118 (31.1)	
Monthly income	None	41 (10.8)	
(10,000 KRW)	<50	149 (39.2)	
	50–<150	131 (34.5)	
	≥150	59 (15.5)	
Residence period (years)			22.47 ± 18.00
Region	Seobuk-gwon	75 (19.7)	
	Dongbuk-gwon	77 (20.3)	
	Seonam-gwon	74 (19.4)	
	Dongnam-gwon	77 (20.3)	
	Dosim-gwon	77 (20.3)	
Presence of chronic disease	None	35 (9.2)	
	One	91 (24.0)	
	Two or more	254 (66.8)	

Note. KRW = Korean won; M = mean; SD = standard deviation; yrs = years.

Data collection

A preliminary survey was conducted to check the appropriateness of the research methods and tools. Data were collected from March 8, 2018 to May 14, 2018. Two to three researchers and trained research assistants collected data through participant self-reports or face-to-face interviews. A total of 35 neighborhoods were surveyed. Prior to conducting the survey, one to three senior citizens' centers were randomly selected from each neighborhood. The purpose of the research, time required for it, and benefits of participating were explained, and 10 to 11 individuals from each neighborhood who consented to participate were visited, and they completed the questionnaire.

Analysis

The data were analyzed using SPSS Statistics, version 23.0 (IBM Corp., Armonk, NY, USA) and STATA 13.0 (StataCorp, College Station, TX, USA). Participant and study variable characteristics were analyzed using descriptive statistics (frequency, percentage,

means, and standard deviations). T-test and ANOVA were used to analyze differences in active aging by general participant characteristics. Then, multilevel analysis was used to identify personal and regional factors that affected active aging and their effects at each level.

To analyze the fixed and random effects in the multilevel analysis, a null model was constructed containing only the constant, followed by Model 1, which included the individual level, and Model 2, which included the individual and community levels.

Results

Table 1 shows participants' general characteristics; of the participants, 62.6% were women and the mean age was 80.13 years. Table 2 shows the level of active aging and individual level community capacity. In the case of active aging, the average value was 153.03 ± 27.82 from a possible range of 51 to 255, and the mean rating was 3.00 ± 0.55 out of 5. The mean score for security was 3.46 ± 0.65, and the average score for participation was the lowest at 2.71 ± 0.66.

Results of the univariate analysis (Table 3) showed that active aging was significantly higher in men than women (t = 4.62, p = .032), and participants aged 65–74 years had significantly higher active aging scores than those in the other age groups (t = 20.76, p < .001). In addition, active aging was significantly higher in married rather than bereaved participants (F = 14.89, p < .001) and in those living with family rather than those living alone (t = 3.96, p < .001). Higher education levels were also associated with higher active aging levels, with the highest active aging levels occurring in participants with the highest education levels (high school or higher), followed by middle school, elementary school, and no schooling (F = 23.19, p < .001). Active aging levels were also higher in participants with higher incomes; active aging was higher in participants with an average monthly income of more than 1.5 million won than those with other income levels (F = 24.43, p < .001). Active aging was also significantly higher in participants without any disease than those with two or more diseases (F = 9.52, p < .001). There was a significant positive correlation (r = .53, p < .001) between individual level community capacity and active aging. There was also a statistically significant positive correlation (r = .10, p = .045) between active aging and community capacity in terms of community level shared interests and collaborative contexts.

In the multilevel models, Model 1 included individual level independent variables (Table 4). Individual factors such as age, marital status, living with family members, education, monthly average income, and chronic diseases were used as independent variables. The Wald Chi-square value of Model 1 was 315.69

Table 2 Level of Active Aging and Community Capacity (Individual Level) (N = 380).

Variables	Score range	Min	Max	M ± SD	Average score[a]
Active aging	51-255	93	246	153.03 ± 27.82	3.00 ± 0.55
Participation	30-150	40	150	81.18 ± 19.88	2.71 ± 0.66
Health	13-65	19	63	44.21 ± 8.75	3.40 ± 0.67
Security	8-40	14	40	27.65 ± 5.20	3.46 ± 0.65
Community capacity (individual level)	26-182	50	179	119.99 ± 23.12	4.62 ± 0.89
Participation	4-28	4	28	14.71 ± 5.17	3.68 ± 1.29
Leadership	4-28	4	28	17.68 ± 4.94	4.42 ± 1.24
Connections	5-35	5	35	26.22 ± 5.02	5.24 ± 1.00
Sense of place	3-21	3	21	13.39 ± 4.35	4.46 ± 1.45
Community attitudes	4-28	4	28	20.61 ± 4.65	5.15 ± 1.16
Problem assessment	6-42	6	42	27.39 ± 7.56	4.56 ± 1.26

Note. M = mean; Max = maximum value; Min = minimum value; SD = standard deviation.
[a] Average score range: active aging 1–5, community capacity: 1–7.

Table 3 *Differences in the Level of Active Aging by General Characteristics (N = 380).*

Characteristics	Categories	Active aging		
		M ± SD	t or F	p
Gender	Men	157.06 ± 30.16	4.62	.032
	Women	150.63 ± 26.10		
Age (yrs)	65–74[a]	167.77 ± 26.79	20.76	<.001
	75–84[b]	153.42 ± 25.92		a>b>c
	≥85[c]	141.59 ± 27.36		
Marital status	Married[a]	159.93 ± 27.91	14.89	<.001
	Widowed[b]	145.54 ± 25.63		a>b
	Single/Divorced[c]	135.00 ± 23.82		
Living	With family	156.59 ± 27.31	3.96	<.001
	Alone	144.41 ± 27.25		
Education	None[a]	139.43 ± 25.17	23.19	<.001
	Elementary school[b]	144.95 ± 24.49		d>a,b,c
	Middle school[c]	155.19 ± 24.73		c>a
	≥High school[d]	167.69 ± 27.60		
Monthly income (10,000 KRW)	None[a]	141.73 ± 22.88	24.43	<.001
	<50[b]	144.28 ± 25.98		d>c>b
	50–<150[c]	156.44 ± 24.95		d>a
	≥150[d]	175.46 ± 27.45		
Number of chronic diseases	None[a]	169.26 ± 25.31	9.52	<.001
	One[b]	157.04 ± 26.68		a>c
	Two or more[c]	149.36 ± 27.64		

Note. KRW = Korean won; M = mean; SD = standard deviation; yrs = years.
[a,b,c,d] Scheffe's test.

Table 4 *Multilevel Model of Active Aging (N = 380).*

Variables	Categories	Null Model			Model I			Model II		
		Coef.	SE	p	Coef.	SE	p	Coef.	SE	p
Fixed effects										
Individual level										
Age (yrs)	75–84				−8.27	3.01	.006	−8.37	2.99	.005
	≥85				−16.26	3.56	<.001	−16.22	3.53	<.001
	65–74[a]									
Marital status	Single/Divorced				−0.93	8.63	.914	−2.55	8.64	.768
	Widowed				1.61	3.18	.613	1.63	3.16	.606
	Married[a]									
Living	Alone				−3.01	3.10	.331	−2.27	3.08	.378
	With family[a]									
Education	Elementary school				2.35	3.18	.460	2.70	3.17	.394
	Middle school				8.90	3.58	.013	8.95	3.56	.012
	≥High school				12.96	3.52	<.001	12.40	3.52	<.001
	None[a]									
Monthly income (10,000 KRW)	<50				0.41	3.66	.910	0.27	3.64	.942
	50–<150				3.00	3.82	.433	2.94	3.80	.439
	≥150				16.49	4.56	<.001	16.95	4.53	<.001
	None[a]									
Presence of chronic disease	One				−5.23	4.09	.201	−5.38	4.08	.187
	Two or more				−4.23	3.90	.278	−4.55	3.90	.243
	No[a]									
Community capacity individual level					0.54	0.05	<.001	0.54	0.05	<.001
Community capacity community level										
Resource								−1.56	1.26	.217
Shared interests & collaboration context								2.80	1.27	.027
Random effects										
LR[b] test vs. linear regression										
Log likelihood		−1798.42			−1683.60			−1681.37		
X² (p-value)		8.08 (.002)			4.93 (.013)			2.31 (.064)		
Variance (SE)										
Community level		59.99	30.34		26.69	16.05		16.93	13.63	
ICC[c]										
Community level			.078			.064			.041	

Note. Coef. = coefficient; KRW = Korean won; SE = standard errors; yrs=years.
[a] Reference group.
[b] LR: likelihood ratio.
[c] ICC: intraclass correlation coefficient.

(p < .001), indicating that a statistically significant fixed effect explained active aging. The likelihood ratio test for the random effects model was also significant (p = .013). The intraclass correlation coefficient (ICC) was .064, which accounted for 6.4% of the total variance in active aging at the community level. The statistically significant fixed-effect factors included age, education, monthly average income, and individual community capacity.

Multilevel Model 2 included both individual and community level independent variables (Table 4). Community level independent variables were Factors 1 and 2 in the composite index, which were estimated for 35 neighborhoods using principal component analysis, and the resulting Z-score was applied. Factor rotation was conducted using Varimax. The eigenvalue of "resource" (Factor 1) was 1.73, which showed an explanatory power of 34.6%. The eigenvalue of "shared interests and collaboration context" (Factor 2) was 1.23, and the two factors were combined to give a cumulative explanatory power of 59.1%. Factor 1 had a factor load of 0.82 in the traditional market and 0.74 in the public sports facility, and in Factor 2, the cooperative union loading was 0.73 and that of the senior leisure welfare facility was 0.68. Factor 1 included resources (traditional markets, public sports facilities), whereas Factor 2 included common interests and cooperative contexts (cooperative union, senior leisure welfare facilities).

The value of the Wald Chi-square in Model 2 was 328.66 (p < .001), indicating that active aging was adequately explained by the fixed effects of statistically significant factors. The p-value for the random-effects model was .064. However, with the input of community capacity variables, the ICC in 35 neighborhoods indicated 4.1% variance, suggesting that, even after considering the community characteristics, community differences still accounted for 4.1% of active aging. Thus, the fixed effects, age (p = .005, p = .001), education (p = .012, p < .001), monthly average income (p < .001), and individual level community capacity (p < .001) were identified as statistically significant factors. Factor 2 of the community level community capacity, which included the number of senior leisure welfare facilities and cooperative unions, was also statistically significant (p = .027).

Discussion

There is growing interest in how individual and community related factors affect older adults' health, particularly active aging. However, empirical studies do not provide adequate information about active aging. This is the first study to investigate the influence of both individual and community level community capacities on active aging.

In this study, the average active aging score was moderate. Of the three subdomains, scores on "safety" were the highest, followed by "health" and "participation" scores. Another study measured the active aging of older people in Korea based on the three domains specified by the WHO: safety, health, and participation in that order [31]. However, in a prior study of senior citizens from 16 countries, Korea ranked the 15th in the active aging, and the level of the Korean population was 0.47, which was significantly lower than the overall average of 0.56 [32].

In the present study, participation in active aging refers to the level of personal participation, such as self-development, religious activities, social activities, family support, and leisure activities. A prior study that compared active aging in other countries found participation to be the lowest among the three subdomains [32]. Denmark and Sweden, countries with high employment rates and well-developed social security systems for older adults, have much higher levels of active aging than other countries [32].

However, only about 31% of older people in Korea were engaged in economic activities, with about 40% performing simple labor [15]. The economic activities of older people in Korea are relatively low, and their activities are not diverse. In addition, though there are public facilities where older people can participate in leisure activities, including senior citizens' centers and senior welfare facilities, the utilization rate of the former differed about nine times between high and low regions, and that of the latter about three times [15]. The most common reason for dissatisfaction with the senior citizens' center was related to the lack of harmony with the actions and characters of other people who used the center (69.4%), and about 26% of dissatisfaction was related to insufficient facilities and programs [15]. In Korea, older people face limitations in their participation and leisure activities that involve the use of public facilities.

Active aging through participation promotes life satisfaction and personal well-being. Participation-related activities were associated with cognitive function, subjective health conditions, frequency of interacting with family and friends, and higher education levels [33]. This suggests that there are personal and social factors that influence participation, and social participation is an important factor in active aging [34]. In order to improve active aging, it is necessary to promote the diverse participation of the elderly. Social efforts are needed to enhance older adults' participation. To maintain active lives, older adults need to prepare for their future by planning activities in advance. Age, education level, income, and community capacity are factors shown to affect active aging. A prior study also found that active aging was higher in elderly people with a lower age [32,35,36] and higher education level [32].

Old-older people need to increase their physical activity, mental management, and functional preservation early in order to reduce risk factors [37]. They need cognitive and behavioral training to adapt to changing environmental factors [37]. In particular, the level of active aging was high in senior citizens with educational levels higher than middle and high school. For older adults with strong educational backgrounds, stable employment is often guaranteed, increasing the retirement age and ensuring an active entry into the labor market [32]. Moreover, the higher the level of education, the higher the e-health literacy [38]. Web-based health education, which is emphasized by social change, affects health-related decision-making [38]. Elder individuals with low levels of education need continuous lifelong education.

In addition, active aging of older people who had an income of 1.5 million won per month was higher than that of older people without an income. Income is one of the main influences on active aging: the lower the income, the greater the risk of illness and disability [1]. This indicates that individual level socioeconomic positions can also majorly affect active aging.

Individual level community capacities have been identified as factors that affect active aging. They include participation, leadership, connections, sense of place, community attitudes, and problem assessments. The Canadian Regional Health Survey identified a sense of community belonging as a component of community capacity with socioeconomic determinants; it was found to have a positive effect on subjective health and behavioral changes [39]. Community capacities are closely related to health [4] and play a positive role in behavioral change. If older adults' quality of life improves with an increase in active aging, it may also play a cyclical role and lead to an increase in older adults' participation.

Given the distribution of the 35 neighborhoods used to identify community capacities and active aging, 6.4% and 4.1% of the total variance in active aging could be explained by neighborhoods, after

considering individual- and community level variables, respectively.

Previous studies have shown that a community's active aging can vary significantly [40] and that community social relationships and networks are relevant in cultivating active aging [34]. Because the rate of aging, number of senior citizens, and level of socioeconomic development vary across regions, distinct active aging programs should be developed based on the characteristics of each region, with policies implemented through senior citizen programs, rather than at the same level across all regions.

In this study, community level measures were identified, including older adult welfare facilities and cooperative unions, which are part of a shared interest and collaborative context. To enable active aging in senior leisure welfare facilities, social relationships can be formed through communication and exchanges among residents with similar interests [15]. Social cooperatives in cooperative unions are voluntary organizations that solve the problems of the community, revitalize communities, and make villages more livable [22]. This strongly suggests that the opportunities for senior citizens to participate in projects will increase, thereby strengthening the community capacity to promote active aging. This suggests that voluntary groups or organizations with shared interests and collaboration are needed to improve community capacity. In addition, community nurses and health practitioners who provide primary health care need to consider it to organize and apply health-promotion interventions for older adults. However, the resources at the community level were not associated with active aging. Community factors affecting older adults vary with the circumstances and research setting [41]. It is assumed that resources have spatial meaning; the common goal does not regularly interact with it and it plays an indirect role. Therefore, meaningful activities should be performed so that social exchanges can occur, not merely the spatial meaning of resources.

This study has limitations in that it used operational definitions to measure the concept of individual participation in the subdomains of active aging and community participation in the subdomains of community capacity. Participants were older people who engaged in the senior citizens' center in the community, and there are limitations to generalizing these findings to all senior citizens, including those who are not involved in the senior citizens' center and who are vulnerable. In addition, interpretations regarding community capacities at the individual and community levels are limited because this study did not examine the validity of the translation of the Community Capacity Instrument. This study used public data based on the operational definitions and composition scores used in social capital research. This study did not include the overall capacity of the community in terms of context, resources, activities, and outcomes considered in preceding studies.

However, this study is meaningful because it examines community capacities based on the theory of individuals' community connectivity, community consciousness, and health relationships and verifies their relationship with, and influence on, active aging. It is also meaningful in terms of multidimensional community environmental considerations, which provide the basis for theoretical foundations.

Conclusion

This study was conducted to identify the level of active aging in older adults and the influence of individual community level community capacities on active aging. Results indicate that community capacity is an important resource for active aging among older adults and suggest the need to develop appropriate strategies that consider both individual and community factors, such as the contextual indicators of community capacity, to improve active aging.

Conflict of interest

The authors declare that there are no conflicts of interest.

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