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Seniors Perception on Age-Friendly Aspects in Jeju Island, South Korea

- Urban vs Rural -

제주도 거주 노인의 고령친화도시에 관한 인식 조사

- 도시 vs 농촌 -

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Abstract

The purpose of this study was to compare urban and rural seniors' perceptions on the eight aspects of the World Health Organization Age-Friendly Cities (AFC) initiative on Jeju Island, South Korea. Face-to-face interviews using structured questionnaires were administered to 497 persons aged 65+ living on Jeju Island. Findings suggested that urban and rural held significantly different perceptions on five aspects of AFC (outdoor space and buildings, housing, civic participation and employment, community support and health services, and respect and social inclusion). Predictors of overall AFC score for all participants included age and living in a single-family home. Among urban dwellers, monthly household income and length of residence predicted AFC score while among rural seniors, predictors of AFC included educational attainment. To make communities more age-friendly, perspectives of older residents should be sought, shared, and reflected in policy and different strategies and priorities should be developed specific to urban and rural areas.

Keywords : Age Friendly Cities, Urban-rural Comparison, Seniors Perception, Jeju, World Health Organization
주 요 어 : 고령친화도시, 도시-농촌 비교, 노인인식, 제주, 세계보건기구

I. Introduction

Populations worldwide are living longer. The percentage of adults aged 60+ is expected to double from 11% in 2009 to 22% in 2050 (United Nations, 2009). To address the issue of global population aging, the United Nations' World Health Organization (WHO) proposed *Active Ageing (AA): A Policy Framework* in 2002 (WHO, 2002). The WHO contends that "countries can afford to get old if governments, international organizations and civil society enact "active aging" policies and programs that enhance the health, participation and security of older citizens" (WHO, 2002, p. 6). The proposed policy action strategies for active aging were organized in three priority pillars: older persons and development; advancing health and well-being into old age; and *ensuring enabling and supportive environment*s (WHO, 2002).

To implement AA and ensure enabling and supportive environments worldwide, the WHO further proposed the Age-Friendly Cities (AFC) guidelines in 2006. The AFC provides a comprehensive framework built upon eight key categories including three aspects of the built environment (i.e., housing, outdoor space and buildings, and transportation); and five aspects of the social environment (i.e., social participation, respect and social inclusion, civic participation and employment, communication and information, and community support and health services) (WHO, 2007). Engaging seniors in the planning of AFC initiatives has been emphasized from inception (WHO, 2012). However, there is limited research on the perspectives of older citizens on the eight aspects of the AFC. In response, this study aims to analyze seniors' perceptions on the eight aspects of AFC in Korea.

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II. Literature Review

The AFC framework has been used to guide policy and services in many local communities and countries as they address increasing number of older populations. Korea is no exception. Korea reached the international threshold of population aging (7%) in 2001 with the number of persons aged 65+ rising to 12.7% in 2014 (Statistics Korea, 2014). Moreover, the population of its older population is projected to exceed 32% by 2040 (Statistics Korea, 2014). In response to the rapidly increasing number of seniors, local and provincial governments in Korea have started proposing policy priorities and strategies related to AFC (Korea Health Industry Development Institute, 2011).

The AFC has played an important role in emerging research to develop applications and systems to facilitate independence and enable aging-in-place at the global level. All eight aspects of AFC can be individualized and addressed within a timeline consistent with each community's agenda and priorities. To assist communities in addressing the needs of aging residents, WHO has launched the Global Network of Age-Friendly Cities and Communities (GNAFCC) in 2010 (WHO, 2014). Since then, over 200 communities across 26 countries have become involved (WHO, 2014).

The AFC has become a priority concern in many countries. For example, in Canada, five provinces have identified AFC as a policy priority and over 100 local communities are engaged in AFC activities (Public Health Agency of Canada, 2010). In support, the Canadian Association on Gerontology (CAG) has made the gathering of policy-relevant evidence about AFC a research priority for their members (CAG, 2010).

The United Kingdom (UK) has also recognized the positive implications of societal aging and its interconnections with community planning (Harding, 2007). Placing an emphasis on preventative care, the UK's approach to AFC was to ensure residential design and community planning did not exclude residents based on age or disability (Sixsmith & Sixsmith, 2008). The UK preceded their AFC initiative with an extensive research project, *EnableAge*, with European Union countries to analyze the health outcomes mediated by home and neighborhood environments (UK Department for Community and Local Government, 2008). In both Canada and the UK, municipal governments have continued to follow community planning initiatives and AFC awardee communities are required to incorporate existing zoning regulations and local policies in their official planning using the eight aspects of AFC (examples found at www.seniorsbc.ca/agefriendly).

AFC in the United States of America (USA) has focused on making communities more "livable" and "walkable" - an approach that emphasizes the accessibility of buildings and transportation, community infrastructure, and connection to local amenities (Hwang et al., 2008; Metlife Mature Markets Institute and Stanford Center on Longevity, 2013; National Association of Area Agencies on Aging, 2007; Oberlink, 2008; US Environmental Protection Agency, 2011). The process of successful AFC in the USA includes collaborative leadership between local planning departments and area agencies on aging (e.g., Age-Friendly New York, Aging Atlanta Partnership and MN Vital Aging Network). Local development has also emerged through the use of a social action model that increases awareness of accessibility among builders and developers by including advocates and consumers in the building process (Scharlach, 2009). This approach has been very successful in promoting AFC. By the end of 2012, AARP (formerly the American Association of Retired Persons) partnering with WHO, has led AFC pilot projects in seven states (GA, IA, KS, MI, NY, OR, PA) and the District of Columbia, (AARP, 2012).

The development of outcome indicators for AFC began in 2011 with participating GNAFCC around the world conducting focus groups and surveys to identify indicators and to set community priorities (WHO, 2014). With the help of expert evaluators, a WHO subcommittee has worked with AFC to identify indicators for measuring AFC progress and sustainability. Indicator criteria included technical requirements (valid and reliable, replicable, measurable and observable, sensitivity, representativeness, process and outcome indicators, and quantitative and qualitative) and practical requirements for planning and outcome measurements (WHO, 2013).

AFC indicators identified at the community level tend to be more site specific than the broader indicators at the regional and country levels. Some of universal indicators identified by AARP (2005), WHO (2012), and Metlife Mature Markets Institute and Stanford Center on Longevity (2013) include:

- Outdoor space and buildings: walkability (pedestrian routes and sidewalks), public buildings, neighborhood safety, outdoor areas
- Transportation: Public transportation quality and utilization, transportation options, and safe driving conditions
- Housing: Affordability, housing options, accessibility and visit-ability, and home modifications
- Social participation: Availability of public indoor recreation space, continuing education, intergenerational programs, and elimination of barriers to engaging in social and physical activities
- Respect and social inclusion: Attitude of service providers, identification of age-specific needs and preferences, school activities, and access to various services

- Civic participation and employment: Volunteer and job opportunities for seniors
- Communication and information: Access to community information, large texts, information in multiple languages, access to computer and internet
- Community Support and Health Services: Community services, and health care

Although these indicators are comprehensive and can align with community goals and priorities, none are exclusive to a single domain because features can intersect or overlap. Some items might also be more suitable for some geographic areas more than others (e.g., rural and urban). Nevertheless, there is limited information on how seniors across geographic areas perceive AFC. Thus, the goal of this study is to compare urban and rural seniors' perceptions on the eight aspects of AFC. The specific aims of this study are to:

- Analyze demographic and housing characteristics of urban and rural seniors
- Investigate urban and rural seniors' perceptions on eight aspects of AFC
- Identify predictors of AFC using demographic and housing characteristics of urban and rural seniors

III. Methods

1. Sample

Data were collected on Jeju Island in 2014. Jeju Island is a province of South Korea located on the southern coast. We selected Jeju Island because it is known as the longevity island. The island includes the highest proportion of residents aged 85+ in Korea and it is considered a popular retirement destination (Koh, 2011). In 2014, the number of residents aged 65+ living on Jeju Island was 76,800; accounting for 13% of the total population (Statistics Korea, 2014).

Jeju Island contains two cities (*si*) and *Si* includes 43 sub-units recognized as *dong, eup* and *myun* (Jeju Special Self-Governing Province, n.d.). Typical town centers are located in *dong*, and communities outside of these centers are called *eup or myun. Eup or myun* are also generally located at a distance from other communities. For comparative analysis, we identified persons living in *dong* as urban residents and persons living in *eup or myun* as rural residents. For this study, we selected 11 *dongs* 7 *eups*, 3 and *myun* with the highest senior populations on Jeju Island and contacted local community centers and seniors centers to recruit participants.

Face-to-face interviews were conducted using structured questionnaires. Of the 500 participants interviewed, 3 participants were dropped from analysis because they were under age 65, resulting in 497 participants in this study. Initial contact with potential participants was made by email or fax explaining the purpose of study. Data were collected over a period of six weeks during September and October, 2014 by trained researchers. All participants gave consent to participate. The average interview time was 40 minutes.

2. Measures

To investigate participants' perceptions on AFC, the WHO's AFC checklist was adapted for Jeju Island by the project team. The resultant 43 items represent the eight aspects of AFC analyzed:

- Outdoor space and buildings were measured using six items asking about sidewalk safety and quality, crosswalks, traffic lights, accessible entrance, and parks
- Transportation was measured by eight items concerning destination, bus stops, drivers' attitudes, and road condition
- Housing was measured with seven items including thresholds in the house, accessibility in the bathroom and kitchen, heating and cooling, affordability, and proximity to local amenities
- Social participation was measured using five items focusing on leisure activities, participation in family events and socializing
- Respect and social inclusion was measured with three items asking about attitude of public servants, respect for older residents, and availability of intergenerational activities
- Civic participation and employment was measured using four items focusing on participation in community meetings, employment, and volunteer opportunities
- Communication and information was measured by six items concerning access and readability of public information, and communication with younger residents
- Community support and health service was measured with four items asking about access to emergency service, public health service, preventive health service, informal care service and general welfare services

The response set for all of the AFC items was a five-item Likert scale ranging from 1 for "not at all agree" to 5 for "very much agree." Responses to the 43 items were summed to create a total AFC score, which was used as a dependent variable in analysis. Participant total scores ranged from 43 (lowest) to 215 (highest).

Independent variables consisting of demographic and housing characteristics were collected from each participant. Items included gender, marital status, age, education, monthly household income, housing type, tenure, and length of residence at current housing.

3. Statistical analyses

All data were screened for accuracy by examining frequency distributions and measures of central tendency and variance to detect out-of-range values. A multiple imputation approach was used for estimating missing data (Allison, 2001). Preliminary analysis was conducted by computing distributions, means, standard deviations, and correlations among variables using SPSS 22. To compare differences between urban and rural responses, Chi-square and *t*-tests were conducted. To predict AFC score, hierarchical regression analysis was conducted.

IV. Results

A summary of demographic and housing characteristics of the participants can be found in Table 1. Participants were predominantly male, aged 65-79, received an elementary or middle school education, and owned their own home. Urban and rural seniors were significantly different from each other in terms of marital status, education, monthly household income, type of housing, tenure, and length of residence. Urban seniors were more apt to married, attained a higher level of education, and reported a higher monthly household income. However, rural seniors were more likely to live in single-family homes, own their homes, and intended to stay longer at their current home compared to urban seniors.

Differences in perceptions on the eight aspects of AFC between urban and rural respondents are shown in Table 2. The collective responses or total measure means for two built environment aspects (outdoor space & buildings, and housing) and three social environment aspects (respect & social inclusion, civic participation & employment, and community support & health service) were significantly different between urban and rural seniors. Among urban seniors, the total measure means for outdoor space & buildings (M=3.68), housing (M=3.15), civic participation & employment (M =2.60), and community support & health service (M =3.16) were significantly higher than among rural seniors (M=3.43, 2.78, 2.22, & 2.76 respectively). However, the total mean scores for respect & social inclusion aspect were higher among rural seniors (M =4.03) than their urban counterparts (M =3.52).

More specifically, when rating outdoor space and buildings, urban seniors perceived that their streets and sidewalks were safe for pedestrians; plenty of crosswalks were available; crossing times at traffic lights were adequate; and neighborhood parks were available for exercising or walking. However, ramp accessibility at building entrances was rated slightly lower in urban areas (M=3.63) than rural areas (M=3.86).

Regarding housing, responses to four items emerged

Table 1. *Characteristics of the Participants*

Characteristics	Urban (n=291)	Rural (n=206)	χ^2 or t-values
Demographic Characteristics			
Gender (%)			.35
Male	57.0	59.7	
Female	43.0	40.3	
Marital Status (%)			5.06*
Married	66.6	56.6	
All others	33.4	43.4	
Age (%)			-.38
65-69	28.2	30.1	
70-74	27.8	24.8	
75-79	21.6	19.9	
80-84	14.1	16.5	
85-89	6.9	5.3	
90+	1.4	3.4	
Education (%)			4.93***
Illiteracy	7.3	14.7	
No school but can read	10.4	19.1	
Elementary school	29.4	27.5	
Middle school	21.1	23.0	
High school	18.7	10.8	
Associate Degree	1.7	1.5	
College+	11.4	3.4	
Monthly Household Income (%)			2.84**
under 500 thousand won	38.4	42.9	
510,000-1,000,000	21.8	27.3	
1,010,000-1,500,000	10.7	10.2	
1,510,000-2,000,000	12.8	12.7	
2,010,000-2,500,000	5.5	3.4	
2,510,000-3,000,000	5.5	1.5	
3,010,000-3,500,000	1.0	--	
3,510,000-4,000,000	2.4	1.0	
4,010,000+	1.7	1.0	
Housing Characteristics			
Type of Housing (%)			67.36***
Single-family	61.0	93.7	
All others	39.0	6.3	
Tenure (%)			9.97**
Own	80.3	90.7	
Rent	19.7	9.3	
Length of Residence at Current Housing (%)			-12.72**
under 10 years	18.7	4.9	
11-20	15.5	3.0	
21-30	21.5	3.0	
31-40	10.6	4.9	
41-50	10.9	13.8	
51-60	4.9	14.3	
61-70	9.2	25.1	
71-80	8.5	24.6	
over 81 years	.4	6.4	

*p< .05 **p< .01 ***p< .001.

Table 2. *Participant Perceptions on Age-Friendly Aspects*

	AFC Aspects	Urban (n=291)	Rural (n=206)	*t*-values
Outdoor	There is neighborhood park for exercising or walking.	3.74	3.20	5.04***
Space &	There are plenty of crosswalks in my community	3.85	3.42	4.53***
Buildings	Switch time of traffic light is long enough to cross the street.	3.45	3.12	3.06**
	The ramp is provided at the entrance of buildings.	3.63	3.86	-2.44*
	Street and sidewalk are divided that it's safe for pedestrian to walk.	3.61	3.40	2.02*
	Sidewalk is flat enough to walk.	3.79	3.72	.79
	Total Measure Mean	3.68	3.43	3.55***
Housing	There is no threshold inside of house.	3.57	3.34	2.20*
	Heating and air-conditioning system are well equipped in my house.	3.73	3.36	4.31***
	Police or security guards often patrol around the community.	2.99	2.56	4.36**
	The convenience facilities such as pharmacy, hospital, grocery shop are near in walking distance.	3.53	2.48	9.64***
	It is necessary to watch out not to fall in bathroom because of slippery floor.	2.84	2.64	1.89
	It is uncomfortable for me to cook because the heights of sink and cupboard do not fit me.	2.65	2.51	1.32
	It is affordable to run heating and air-conditioning system.	2.79	2.70	.81
	Total Measure Mean	3.15	2.78	7.81***
Civic	There are lots of opportunities to join public services and paid volunteering.	2.57	2.16	4.23***
Participation	I would like to join volunteer service to help people in needs.	2.82	2.34	4.07***
& Employment	I actively participate in community meetings to share my opinion.	2.62	2.32	2.60**
	It is easy to find paid job whenever I want.	2.34	2.06	2.70**
	Total Measure Mean	2.60	2.22	4.85***
Community	There is emergency service nearby.	3.40	2.66	6.83***
Support &	There is free (or cheap) informal care service.	2.81	2.22	5.58***
Health Services	There is welfare service that helps households chores or be friends who talking to.	2.61	2.05	5.29***
	The public health services provided periodic check-up services and health prevention services.	3.87	4.10	-3.12**
	Total Measure Mean	3.18	2.76	5.45***
Respect &	My neighbors respect for elders.	3.66	4.21	-6.72***
Social	There is at least one intergenerational activity annually in my community.	3.02	3.83	-8.12***
Inclusion	Public servants are polite to the elders.	3.88	4.06	-2.25*
	Total Measure Mean	3.52	4.03	-7.91***
Transportation	There is bus stop near my house.	3.46	3.14	2.74*
	Road is wide enough to drive.	3.48	3.21	2.19*
	There are chairs and roofs in the bus stop that make passengers comfortable during waiting for bus.	3.91	3.85	.67
	Bus drivers drive slowly right after passengers' getting into or out of the bus.	3.28	3.40	-1.17
	Taxi drivers drives slowly right after passengers' getting into or out of the taxi.	3.09	3.20	-1.04
	Traffic signs are big enough to read during driving.	3.31	3.45	-1.17
	Taxi fare is reasonable.	2.45	2.29	1.28
	It is easy to get to the final destination by bus.	3.63	3.64	-.17
	Total Measure Mean	3.21	3.25	-.42
Social	I have friends, family members or relatives to speak my mind.	3.81	3.57	2.95**
Participation	There are elderly leisure facilities near my house.	3.96	4.01	-.69
	I go to elderly leisure facilities more than four times a week.	3.57	3.44	1.04
	It's valuable to go to elderly leisure facilities because there are lots of programs.	3.72	3.55	1.67
	I actively participate in others' family events and various gatherings.	3.49	3.34	1.36
	Total Measure Mean	3.72	3.60	1.77
Communication	It is easy to get information through community organizations.	3.30	3.80	-5.70***
& Information	There is a person who updates daily news and useful information to me in easy-to-understand language.	3.28	3.64	-4.01***
	It is easy to get public information.	3.23	2.91	3.38***
	I can communicate with young generations and they can understand what I say in Jeju language	3.50	3.82	-3.13**
	The written texts in public information are big enough to read.	2.68	2.45	2.19*
	It is easy for me to make phone calls using cell phones.	3.71	3.72	-.08
	Total Measure Mean	3.28	3.39	-1.73

*p< .05 **p< .01 ***p< .001.

significantly different between urban and rural respondents. Urban seniors were more likely than rural seniors to perceive that no threshold entries were found in houses; heating and air-conditioning systems were well equipped in their house; police/security guards often patrolled the area; and local amenities were within walking distance of the home.

All four items representing civic participation and employment were also significantly different between urban and rural seniors. Urban seniors were more likely than rural seniors to participate in community meetings, join volunteer services, find paid jobs, and to perceive that there were lots of opportunities to do public services.

Concerning community support and health services, ratings for all four items were significantly different between urban and rural respondents. Urban seniors perceived that emergency services were nearby and that informal care services and welfare services were available. In contrast, rural seniors were more likely than urban seniors to have access to public health services such as medical check-ups and health prevention services.

All three items capturing community respect and social inclusion were also significantly different among urban and rural respondents. Unlike other AFC aspects, the items were rated significantly higher among rural seniors than urban seniors. Rural seniors reported that public servants were polite to them; neighbors respected them; and there was at least one intergenerational activity hosted annually in their community whereas, urban elders held less positive perceptions.

Differences in ratings of transportation, social participation, and communication and information were not significant when assessed by total measure mean score. Although individual items within each category were significantly different between urban and rural respondents.

To predict AFC score based on participant demographics and housing characteristics, we conducted a hierarchical regression analysis. As shown in Table 3, analysis was performed separately for urban and rural participants, which resulted in the same and different predictors. Among both groups, there was a significant positive relationship in predicting total AFC score by age (the older the participant, the higher AFC score) and a significant negative relationship in predicting total AFC score for respondents living in single-family homes (lower AFC score from participants living in single-family homes).

Within the urban sample, monthly household income and length of residence at current housing predicted total AFC score (the higher the income and the greater time in residency, the higher the score). However, this was not the case in the rural sample although within that group educational attainment predicted total AFC score (the more education, the higher the AFC score). The regression model explained 30% of variance ($p< .001$) in the urban sample and 41% of variance ($p< .01$) in the rural sample.

Table 3. *Predictors of Age-Friendly Aspects*

Variables	Urban		Rural	
	B	β	B	β
Gender (male)	-7.96	-.19	1.75	.04
Marital status (married)	14.75	.31**	-5.32	-.14
Age	4.38	.25**	4.35	.33*
Education	1.30	.11	6.91	.62**
Household income	3.09	.31**	2.00	.21
Tenure (owner)	5.44	.09	1.48	.02
Housing type (single family home)	-12.76	-.31**	-29.23	-.40*
Length of residence at current housing	2.74	.29**	1.07	.11
	R^2= .30***		R^2= .41**	

*$p< .05$ **$p< .01$ ***$p< .001$

V. Discussion and Conclusions

The goal of this study was to compare the perceptions of older urban and rural residents of Jeju Island, South Korea on eight aspects of AFC to provide recommendations for policy. According to our analysis, the perceptions of urban seniors differ from those of rural seniors. Among the eight aspects of AFC, five aspects were significantly different. Findings from two aspects that address the built environment (outdoor space and buildings, and housing) are noteworthy. Respondents from urban areas provided higher scores on items that measure "walkability" or the ability to walk in their communities. The scores were significantly higher on items addressing the separation of streets and sidewalks, and the availability of crosswalks and timers on traffic lights that allowed residents time to cross the street. It is conceivable that these positive perceptions were stronger in urban areas because sidewalks and crosswalks are more common and visible in urban areas than in rural areas. Residents in urban areas also had more access to neighborhood parks that encouraged exercise.

Perceptions about housing varied between urban and rural residents. The housing concerns for residents in rural areas tend to be related to accessibility. Although respondents in rural areas perceived their housing to have fewer problems with thresholds than respondents in urban areas, urban residents perceived more police and security patrolling the area than respondents in rural areas. Although safety is an important issue for older adults, neither group indicated patrolling was a priority for the community. Due to their proximity to a large variety of stores and services, respondents from urban areas

perceived shopping and services to be more convenient than rural respondents, who rated convenience to shopping and services the lowest of all items addressing the built environment.

Urban and rural seniors' perceptions on three aspects of social environment (civic participation and employment, and community support and health services, and respect and social inclusion) also significantly differed. Urban seniors perceived more volunteering and paid job opportunities, but the total mean value of civic participation and employment was the lowest among eight AFC aspects for both urban and rural seniors. Interestingly, rural seniors rated aspects of respect and social inclusion and communication and information more positively than urban seniors, suggesting stronger feelings of connectedness to their communities.

Emphasis on communication and information technology is evident within age-friendly environments. Technologies not only provide assistance and security but also aim to increase the quality of life of the older person by delivering advice, information, education, entertainment and inter-personal communications in the person's familiar environment and in emergency situations. The use of technology can also evolve with the changing needs of individuals as they age when it is required assistance in living independently (Sixsmith & Gutman, 2013). Nonetheless, this aspect was not significantly different between urban and rural seniors.

Our regression model showed some similarities and differences among urban and rural seniors in predicting AFC. Both age and housing type were important variables. Age and perception on AFC were positively related. Also urban and rural seniors living in housing types other than single family homes tended to perceive more positively on AFC. Recently Korean government has sponsored to build community and senior centers in multi-family housing complexes and this might be reflected in perceiving AFC.

In light of the similarities and differences identified between urban and rural participants, it is important to recognize their differing perspectives when developing policy and the built environment. Resident perspectives are informed by the priorities and lifestyles found across geographic locations and need to be used to preserve community character, promote sustainable and energy efficient technology, and contribute to quality of life of all residents.

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