



Perceived urban neighborhood environment for physical activity of older adults in Seoul, Korea: A multimethod qualitative study



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ABSTRACT

This study assessed the attributes of a perceived urban neighborhood environment for the physical activity (PA) of older adults by applying a qualitative multimethod approach to collect both descriptive and spatial information. Conducted in a northern community of Seoul, Korea, from April 2014 to November 2015, data collection methods included 90 walking tours by researchers, 46 face-to-face, semi-structured interviews combined with qualitative mapping with senior residents aged 65+, 19 guided tours with the interviewees, and 3 focus groups with 12 community service providers. Thematic analysis and pattern finding were performed on the data. Walking was the main type of PA of the older adults. Nine attributes of perceived neighborhood environment for PA were identified under three themes: daily living (everyday life activities, mobility, social opportunities, diverse destinations); the multidimensionality of accessibility (physical, economic, psychosocial), and attractiveness and pleasantness (maintenance, aesthetics). The subcategories of the attributes included proximity, access to public transportation, walkability, cost-worthiness, low or no cost, familiarity, sense of welcoming, sociocultural appropriateness, fair access, order and upkeep, safety, openness, cleanliness, and interestingness. Strategies to generate more movement and activities in the everyday routine of the elderly should be a core task for health promotion and neighborhood design. A strategic application of multiple qualitative methods can create an opportunity to build contextual understanding and to generate ideas in interactions with the community.

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1. Introduction

The contributions of physical activity (PA) to the health of older adults have been widely discussed. A substantial proportion of older adults, however, are reported not to be active at a level sufficient to maintain their health (World Health Organization [WHO], 2007). Therefore, nations and communities are striving to develop strategies and plans to promote PA among older adults, and identifying the environmental determinants of PA is instrumental in the process (Suk, 2004; Fleury and Lee, 2006). Physical environmental determinants identified so far include accessibility to parks and green space (Hoehner et al., 2005; Ribeiro et al., 2015; Van Cauwenberg et al., 2015), the quality of walking paths (Pikora et al., 2006), mixed land use (Berrigan and Troiano, 2002; Nyunt et al., 2015), population density

(Johnson-Lawrence et al., 2015; Saelens et al., 2003), and neighborhood aesthetics (Ball et al., 2001; Cleland et al., 2015; Giles-Corti and Donovan, 2002). The social environment is also an influential factor in terms of the perceived PA levels of others in the neighborhood (Booth et al., 2000), perceived social support (Everard et al., 2000; Van Cauwenberg et al., 2014), and neighborhood safety (Ball et al., 2001; Cerin et al., 2013).

Individuals experience and interpret these environmental characteristics subjectively, and such perceived environments influence their behavioral reaction to and utilization of the environment for physical activity (Ma and Dill, 2015). Perceived environment is developed in community contexts and affects the community utilization and preference of the neighborhood environment for PA (Gebel et al., 2011; Wu et al., 2016). There are contextual characteristics specific to the life stage of the elderly and aging (Rantakokko et al., 2016; Zhilian and Yanwei, 2016), and efforts to explore how elderly community residents make sense of PA in their neighborhood require novel attempts in research conceptually and methodologically (Ivory et al., 2015).

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Meanwhile, few researchers have studied perceived environment and the PA of older adults in an Asian urban context. Therefore, this multimethod qualitative study explored the attributes of perceived environment conducive to what is considered PA by older adults in an urban community in Seoul, Korea.

2. Methods

2.1. Setting

This study was conducted in a northern district of Seoul with an average level of PA friendliness (Kim et al., 2013). The participant community includes three neighborhoods with a high concentration of older adults and long-time residents (Korean Statistical Information Service, 2010).

2.2. Data collection

By strategically integrating text information from descriptive methods (e.g. interviews and discussions), and non-text information from spatial methods (e.g. observations, photography, and mapping), qualitative studies can provide comprehensive, in-depth understanding of the community environment and context related to its development and utilization for PA (Moran et al., 2014). This multimethod qualitative study employed in-depth interviews and focus groups for descriptive methods, and touring and mapping for spatial methods. Data were collected between April 2014 and November 2015.

In-depth interviews were conducted with a total of 46 seniors, with a saturation point of approximately 15 interviews per neighborhood. Through purposive sampling to investigate the attributes of perceived environment conducive to the practice of what older adults consider as PA, physically active seniors were recruited for the interviews. Semi-structured interviewing explored the participants' concept of PA, their perception of the neighborhood environment related to PA, and the community context influencing the perception. A time-chart was

used to facilitate the interview about routine daily activities. Three focus groups with 12 community service providers for the elderly discussed the environmental features affecting the PA and quality of life of seniors. A short survey was administered to collect basic sociodemographic information of the participants (Table 1).

For spatial assessment, each interviewee was asked to draw, with some assistance if needed, a community map on blank paper to mark the places, routes, and boundaries of PA, and meaningful destinations in the neighborhood. Among 46 participants who had completed the interview and mapping, 19 interviewees agreed to guide the research team individually in the neighborhood to visit the relevant places and further explain what they had mentioned in the interview and mapping. The research team also conducted a total of 90 tours to: 1) observe the environment and residents' activities in each neighborhood using a walking tour index (Sung et al., 2015) on various days of the week, time points, and routes to triangulate the observation data, and 2) confirm the community maps developed in the study.

All verbal data were audio-recorded, transcribed verbatim, and enhanced by field notes taken during data collection. All maps developed in the data collection were digitized using the AutoCAD. The study protocol was approved by the Institutional Review Board of the authors' institution (IRB No. 1410/001-018 & 1505/001-026).

2.3. Data analysis

Thematic analysis (Braun and Clarke, 2006) was performed on the interview and focus group data. Two researchers coded the data independently and discussed the coding process and code structure consistently. Initially, separate codebooks were constructed for the in-depth interviews and focus groups. Then, constant comparison reclassified and restructured the codes based on their conceptual relationships. In this process, perceived environmental attributes were identified and organized into three main themes, derived from 130 codes from the in-depth interviews and 54 codes from the focus groups.

With the digital spatial information, neighborhood environmental characteristics associated with the PA of the elderly were identified through pattern-finding in terms of distance, direction, dimension, location, counts, and distribution. Moreover, the spatial data were used to assist the interpretation of the descriptive information on perceived environment.

3. Results

Nine attributes of the perceived environment conducive to elderly participation in PA were organized under three themes: daily living, multidimensionality of accessibility, and attractiveness and pleasantness (Table 2 and Fig. 1). These attributes and themes were supported by the interview and focus group results, and further contextualized by spatial information. Illustrative quotes for each attribute are presented in Table 2.

3.1. Daily living

The study participants defined PA for seniors as "activity involved in maintaining *everyday life*", and "*mobility* for outings and routine activities." In this regard, walking was the most salient type of PA perceived and performed, and often referenced as a standard mode of exercise for the elderly. In addition to walking for an exercise, walking involved with running errands, attending social services, and strolling in the neighborhood to interact with neighbors all constituted the daily PA of the elderly. Having various *social opportunities* and *diverse destinations* in the community, therefore, facilitated the elderly to be active in daily life. Destinations for the elderly to walk to and engage in activities included non-typical PA resources (e.g. amenity services and facilities, rest areas, benches and gazebos, stores and markets, and religious organizations, Fig. 4A-1 and 2) in addition to typical ones (e.g. walking

Table 1
Socio-demographic characteristics of study participants.

Older adults (n = 46)		Service providers (n = 12)	
Age, mean (SD)	75.40 (6.40)	Age, mean (SD)	49.92 (11.03)
Years at current address, mean (SD)	25.34 (19.80)	Years of experience, mean (SD)	6.16 (10.58)
Gender, %		Gender, %	
Female	60.87	Female	83.64
Male	39.13	Male	16.66
Type of residence, %		Type of organization, %	
Single-family house	39.13	Public	66.67
Multiplex	23.91	Non-profit	25.00
Apartment complex	36.96	Private	8.33
Number of cohabitants, %		Type of service, %	
0	50.00	Welfare	83.34
1	32.61	Residential	8.33
2	13.04	Education	8.33
3	4.35		
Subjective health status, %			
Good	28.26		
Average	45.65		
Bad	26.09		
Social security support recipients, %			
Yes	47.83		
No	52.17		
Physical activity at recommended level ^a , %			
Yes	52.17		
No	47.83		

^a Throughout the week, older adults should do at least 150 min of moderate-intensity aerobic physical activity, 75 min of vigorous-intensity aerobic physical activity, or an equivalent combination of moderate- and vigorous-intensity activity (WHO, 2010).

Table 2
Attributes of perceived environment for physical activity of older adults.

Theme	Attribute	Subcategory	Quote	
Daily living	Everyday life activities Mobility		"No need to sign up and pay a fee for exercising. I just live my days, walk around, do house chores, and meet people. It's all exercise for me." (female resident, age 67)	
			"I get out of my place to run errands. Shopping, going to a hair parlor, playing ping-pong at the culture centers, visiting friends to chat, you know. I can't stay home all day. I go here and there every day." (female resident, age 86)	
Multidimensionality of accessibility	Social opportunities Diverse destinations		"It's too far for me to walk all the way here [= welfare center] from home. I come on a bicycle instead. Now I can't walk as much as I used to because my legs are weak and I feel dizzy. So I got myself a used bicycle and ride on it to get around." (male resident, age 65)	
			"I come to the welfare center to have lunch every day. It's my daily routine to come by for lunch. It's kind of a 'going-out' for me. It's rather far from my place, but I walk to and from here for exercise. Once I come here I get to talk to others, which is a good thing." (male resident, age 85)	
	Physical	Proximity	"You can do a lot of things here [central area of the neighborhood]. Restaurants, coffee shops, welfare center are all here. And the subway is nearby. So I come here. Other than for taking a walk, I usually come this way. Meeting friends or other appointments are all done here." (male resident, age 65)	
		Access to public transportation Walkability	"It's close enough for older people to move around in this neighborhood, if they will. There's a store nearby, you can easily get to the mountain following the walking trail, buses run in the neighborhood, and you just walk across the street to get to the subway." (female resident, age 67)	
	Economic	Cost-worthiness	"It's much better for older adults to walk on the street since [a city project for environmental improvement]. The new pavement reduced the risk of tripping and falling greatly. There used to be a lot of falling accidents of older adults after dark." (male non-profit welfare service provider, age 56, 5 years of experience)	
		Low or no cost	"I used to play ping-pong in the neighborhood office but not anymore. There are too many people and it's too crowded now. Space is limited, and I can't play as much as I want. I don't want to pay \$30 a month for it. I'd rather ride a bicycle on my own." (male resident, age 75)	
	Psychosocial	Familiarity		"It's much better for us to move around with the senior free pass. Without the pass, in the past, I used to ride neighborhood buses. Now with the pass, I use subway more than buses, and I think I walk more in this way." (female resident, age 67)
				"You can get a cheap, used bicycle from the junkyard here. Most of the old men in this neighborhood get their bicycles from there. Old people in other neighborhoods envy us being able to buy cheap bicycles here." (male resident, age 75)
		Sense of welcoming		"I feel comfortable here. I guess I've lived here long enough to feel this way. This neighborhood has changed for sure, but still, I have memories here and there. I've lived here for years with my husband. So I'm interested in this neighborhood. I feel attached." (female resident, age 80)
				"I don't get to go to new places, like the new park. People in my close circle come to this parking lot or under the bridge. We walk all the way from home, and here we pull out a picnic mat and relax. Schools and parks are for young people. We'll be in their way in the park where kids are playing. Old people wouldn't go there. I feel comfortable doing activities here." (female resident, age 83)
Sociocultural appropriateness Fair access		"If you go for a walk to the mountain area, you'll find old people with indecent intentions [flirting]. In the park, too. So it's not good to go to those places. Nothing to learn from those people." (female resident, age 84)		
		"Any seniors in this neighborhood can apply for our programs. Those who know us tend to apply again and again. So the programs are competitive, and there's a sort of turf issue in a way." (female senior welfare service provider, age 44, 1 year of experience)		
Attractiveness & Pleasantness	Maintenance	Order & upkeep	"We have a rule set for running programs at the neighborhood center. Some senior citizens may feel uncomfortable with it, but I think it's necessary for managing the programs where all participate together. In general, they cooperate with us very well. I think they are quite satisfied with the programs and facilities." (female neighborhood center worker, age 55, 9 years of experience)	
		Safety	"A senior center is there but I won't go there. I don't want to go. They play cards there and bet on it. It's just not for me." (female resident, age 85)	
	Aesthetics	Open	"It's safe to walk around at night here. Nothing to worry about or be afraid of. Street lights are on, and neighborhood watch people patrol the neighborhood at night. They send the drunk home and monitor youth smoking, and so on." (female resident, age 82)	
		Clean	"In places with high-rises I feel blocked. We have a wide open view in this neighborhood. Isn't it nice? It makes me feel relieved. And the places that catch my eyes, I want to go and see." (female resident, age 65)	
		Interesting	"We have really clean and fresh air in our neighborhood. I guess maybe old people in this neighborhood take a walk in the morning more so than those in other neighborhoods. I think it's all because of clean air. Who would take a walk in the city with polluted air? It's possible only in this neighborhood." (male resident, age 82)	
		"I don't want to take a walk in the same course every day. I don't want to repeat the same thing. Instead, I go to the market, take a look at things, compare prices, go to another market, look around to see what's out there... then I walk home. I take a different route of walking this way, maybe once a week." (male resident, age 85)		

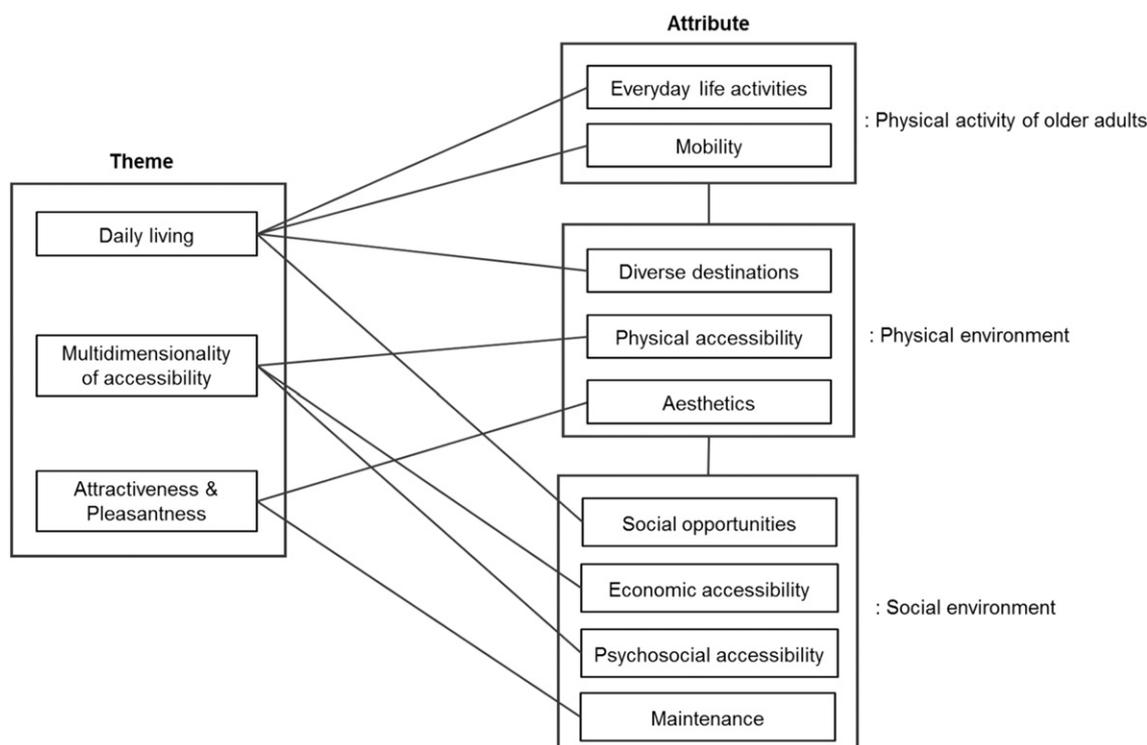


Fig. 1. Structure of themes and attributes.

trails, parks, gardens, bicycle paths, and exercise equipment for the public, Figs. 4A-3, 4A-4, and 5B-1). The interviewees' time charts showed that 14% of their time was spent participating in social opportunities outside the home, 12% at PA facilities or programs, and 9% for leisure, including shopping, volunteering, and engaging in hobbies. The reported likelihood of PA was greater among the respondents engaged in various types of activities in the community.

3.2. Multidimensionality of accessibility

A salient characteristic of the perceived neighborhood environment for older adults' PA was **accessibility** to PA resources. We found multidimensional aspects of this characteristic in particular.

First, the **physical** dimension of accessibility included "proximity to resources generating PA", "walkability", and "access to public transportation". Touring and mapping identified that the perceived life-space of the elderly was 200–700 m in diameter, which was smaller than the administrative village unit (1 km²). The aggregated map showed 8 small parks with exercise equipment, 10 neighborhood senior centers, 1 town welfare center, and 14 general stores/traditional markets as PA-related assets along the main street for 1.9 km north to south. The matching of the interview results and maps confirmed that the perceived assets were distributed within the perceived life-space of older adults (Fig. 2B). Public transport services were available within 150 m from residential areas. Bus stops were 212 m apart on average throughout the community. Other aforementioned community amenities were 200 to 500 m apart from each of the same kind (Fig. 2A).

The elderly participants walked an average of 1.4 km for 15 min per round trip to and from community amenities and social occasions distributed north to south. In comparison, those who strolled for exercise walked east to west along a bicycle path by a stream for approximately 3 km for the duration of 1 h (Fig. 3). Environmental features, such as low slope, even surface for walking, wide sidewalks, and low-height curbs, contributed to walkability and the practice of walking (Fig. 5A). The respondents who evaluated the neighborhoods were served sufficiently by bus and subway lines. However, the transit connectivity granted

out-of-towners easy access to resources in the participant community and raised concerns about litter and security.

In terms of **economic** accessibility, the utility of and accessibility to neighborhood resources were determined by whether they were "worth the cost". The level of accessibility increased when "low or no cost" resources were involved. Despite having fewer stations spread over a larger area, the senior respondents preferred subways (2 lines, 2 stations) to buses (4 lines, 42 stops, approximately \$1.00 USD per ride) because subways are free of charge for senior citizens of Seoul aged 65+. Subsequently, the mobility patterns and routes of outings of the seniors developed in association with the use of the subway. For elderly bicycle riders, local junkyards that sell secondhand bicycles and parts at affordable prices were a significant contributor and community asset for bicycle use and greater mobility (Fig. 5B-2).

Psychosocial accessibility included "familiarity", "sense of welcoming", "socio-cultural appropriateness", and "fair access" to PA resources. The study participants tended to feel comfortable in their old-style, country-like neighborhoods, and became active in familiar environments with long-time neighbors of a similar socio-economic status. They had formed friendships and trust over time by sharing life experiences and stories in the community. Such a shared context contributed to enhanced familiarity with and attachment to the environment, which facilitated social and physical activities in the neighborhood. Psychosocial accessibility also had to do with the sense of welcoming that older adults felt in the neighborhood. Senior-friendly places or services in the community that encourage PA were not necessarily new or fancy, but they were comfortable and welcoming for older adults to participate. Interestingly, senior centers were regarded as a place for older seniors aged 80+ in this study. This study also found that the older adults preferred neighborhood places that discouraged or controlled "socio-culturally inappropriate" activities, for example, smoking, drinking alcohol, betting when playing games, and flirting. Some were dissatisfied, however, with regard to imposing strict standards that prevent people from behaving and interacting comfortably in the neighborhood. Fair opportunities to access places and programs for PA were another psychosocial accessibility issue. When resources were limited, equitable

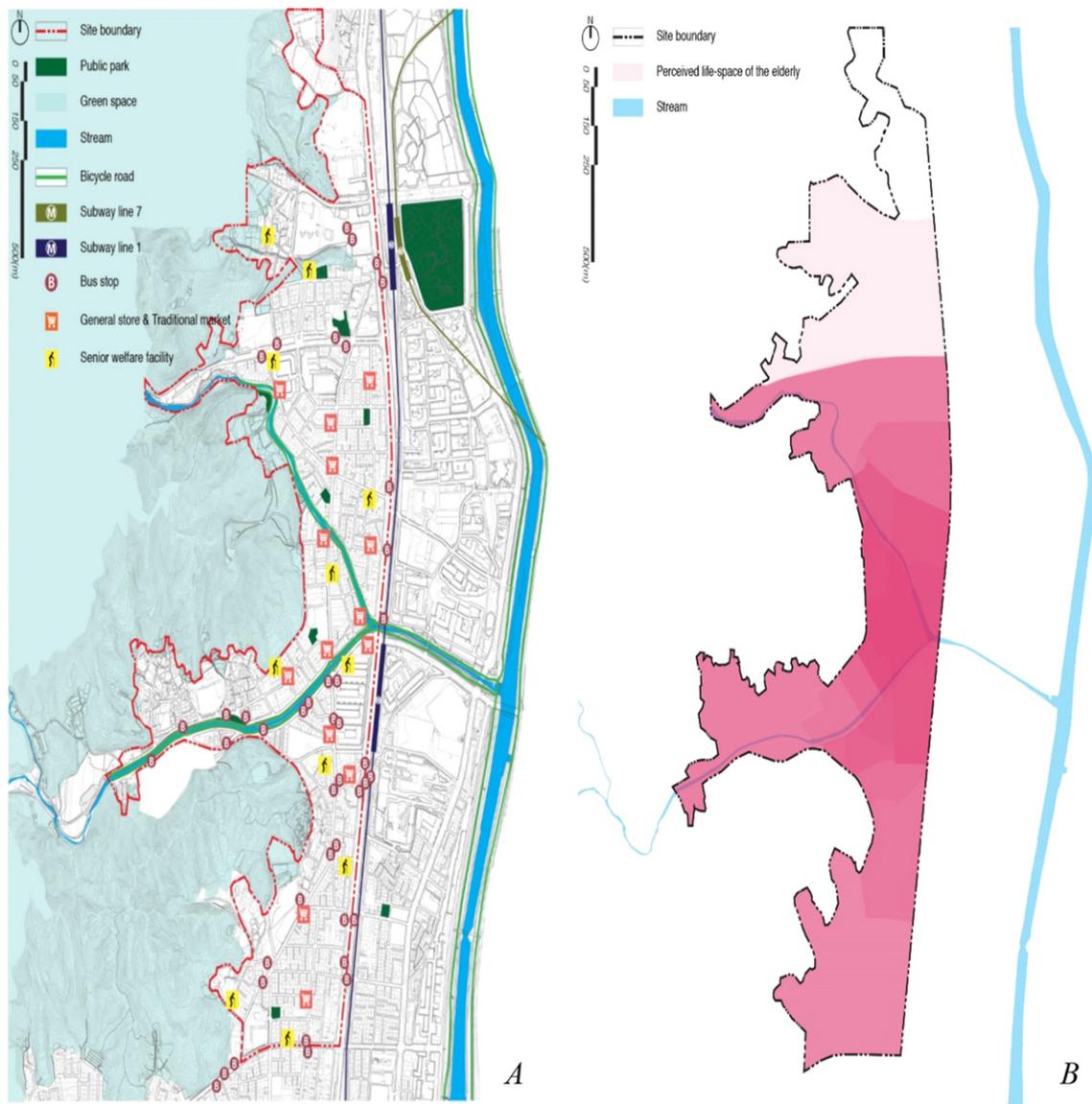


Fig. 2. Aggregated community maps.

A. Distribution of perceived community assets influencing physical activity of older adults. B. Overlaid map of the life-space area of older adults.

access was fundamental to maintain interest and participation in PA, since competition to acquire access would lead to conflicts in the community that could discourage the active lifestyles of the elderly.

3.3. Attractiveness and pleasantness

For the older adults, the perceived attractiveness and pleasantness were attributable to environmental *maintenance* and *aesthetics*. PA was encouraged among seniors when places such as parks, walking trails, and rest areas of local churches and welfare facilities were well maintained and clear of litter. Good “upkeep” of public places impressed a sense of civility and dependability upon elderly users, fostering active utilization (Fig. 5C). Well-maintained, clean, and sound pedestrian infrastructure was emphasized in line with physical and social “safety”, a crucial factor for the PA of older adults (Fig. 5D). The seniors felt safe in their neighborhoods, with police patrol and neighborhood watch activities. Since they begin their daily activities as early as 4 to 5 am, the lighting of neighborhood streets and the presence of a crime watch in early morning hours were important for creating a safe and pleasant environment for PA.

As for neighborhood aesthetics, environments that are “open”, “clean”, and “interesting” affected the PA of older adults. The older adults enjoyed walking to locations that offer a wide open view of the neighborhood. Having open spaces in several locations in the community where people could come to refresh and interact facilitated their PA practice. As a community located near a mountain and streams, the environment of clean air, clear water, greenery, and cool breezes in the summer encouraged older adults to engage in outdoor activities. The older adults agreed that seeing the same scenes every day bored and discouraged them from being active outdoors. They found the environment attractive for strolling when there were changes of scenery over four seasons, with varying types of buildings and people in the streets and new and interesting products in markets and shopping areas.

Focus group discussions with community service providers supported the view that physical accessibility and fair access to PA-related places and opportunities are instrumental for promoting PA among the elderly. Along with accessibility, the pleasantness and safety of the places and opportunities for PA were also emphasized (Fig. 5D). Nevertheless, the emphasis on safety from the service providers' viewpoint was limited to visible dangers in physical facilities. The discussants acknowledged the social activities and networks of older adults as

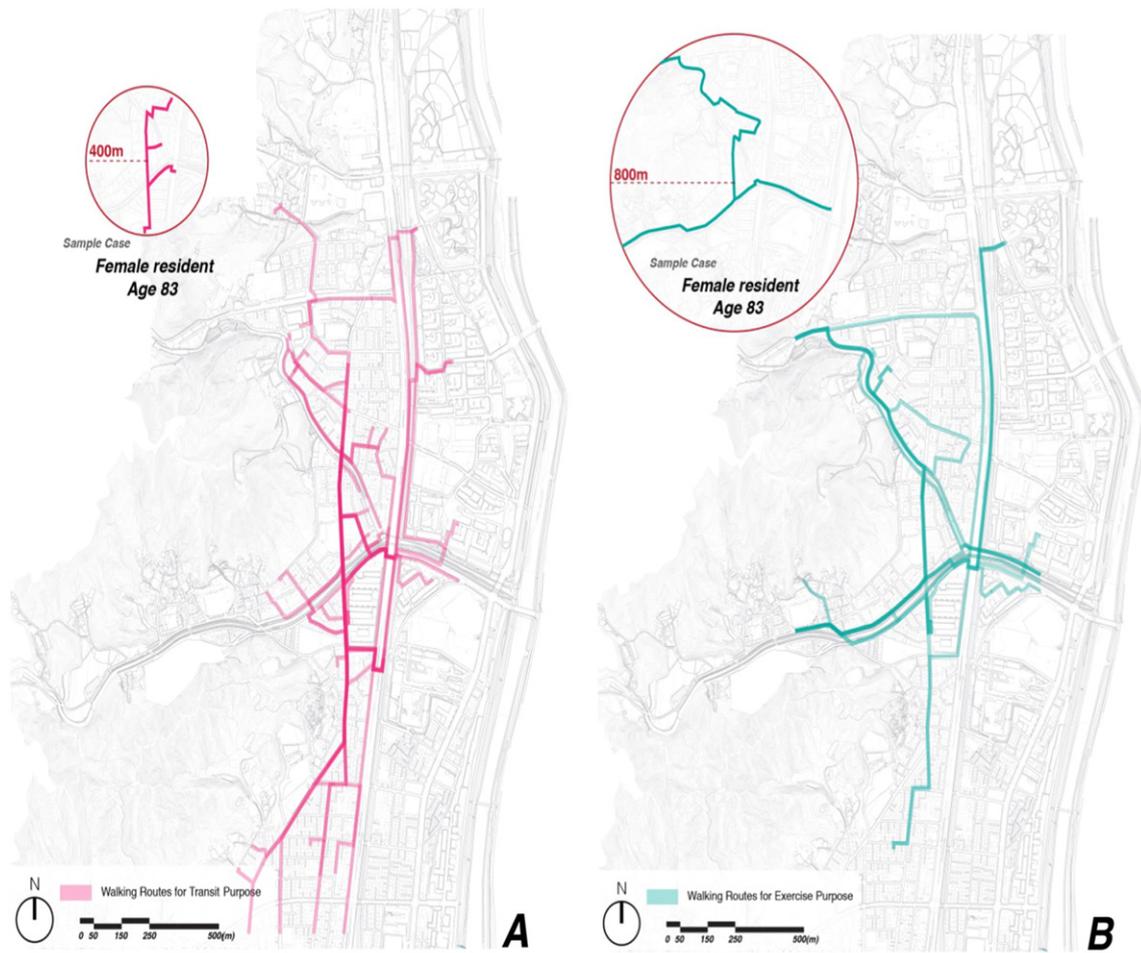


Fig. 3. Patterns of walking routes.

A. A sample case for transit purposes with shorter, north-south pattern. B. A sample case for exercise purposes with longer, east-west pattern.



Fig. 4. Destinations and places for physical activity in the neighborhoods.



Fig. 5. Attributes of perceived accessibility and attractiveness.

important opportunities to plan and implement PA programs and events (Fig. 4B).

4. Discussion

Walking for exercise and for daily living activities represented what the seniors in this study regarded PA for their age. Thereby, having various occasions and destinations in the community facilitated the older adults' PA. The perceived accessibility to such neighborhood assets for PA was threefold: physical (proximity, access to public transportation, and walkability), economic (cost worthiness and low or no cost), and psychosocial (familiarity, sense of welcoming, sociocultural appropriateness, and fair access). Perceived attractiveness and pleasantness influenced by environmental maintenance and aesthetics also affected the PA of older adults. Safety was an important neighborhood attribute for PA emphasized by both seniors and community service providers. It was a construct for a well-maintained community environment, which in turn contributes to the sense of attractiveness and pleasantness that encourages PA.

Walking during one's daily routine has been identified as the main type of PA of older adults (Lockett et al., 2005; Van Cauwenberg et al., 2012). Older adults' walking is influenced by overall walkability (Carlson et al., 2012), in terms of parks and green spaces, land-use

mix, foot and bike trails, land slope, availability of public transportation, street connectivity (Day et al., 2006; Saelens et al., 2003; Shigematsu et al., 2009; Takano et al., 2002), and street lighting (Day et al., 2006). Having diverse things to do and places to go (Mahmood et al., 2012; Wang and Lee, 2010) within perceived (Grant et al., 2010; Lees et al., 2007; Michael et al., 2006; Strath et al., 2007) and actual (Frank et al., 2010; King et al., 2011) proximity contributes to the PA of older adults. Indeed, walking was a main type of PA among seniors in this study and was associated with the availability of and accessibility to multiple destinations and public transit spots in the community. In addition to exercise and recreation opportunities, social occasions motivated the older adults to walk in the community. However, some community assets located along narrow and busy mixed-traffic streets raised concerns about safety and walkability. As the seniors and service providers agreed, perceived physical and social safety in the community (Haselwandter et al., 2015; Loewen et al., 1993; Pikora et al., 2003; Van Cauwenberg et al., 2012) promotes the PA of older adults. Public health efforts should strive to identify, support, and utilize community assets that motivate walking among the elderly, and to establish an adequate level of walkability in intersectoral collaboration. Collaborative development is also necessary to promote an active lifestyle in social, communal occasions within neighborhoods. Interdisciplinary approaches are called for among, but not limited to, the fields of public

health, urban planning, architecture, landscaping, geography, transportation, welfare, and public policy to create and maintain PA-promoting environments for older adults.

The perceived attachment of older adults to a neighborhood environment relates to their psychological and mental wellbeing, and a sense of belonging to the community, which leads to participation in community activities, including PA (Lee, 2013; Wiles et al., 2009). Similarly, the perceived attractiveness of the neighborhood contributes to the promotion of PA of older adults (Ball et al., 2001; Gallagher et al., 2010; Grant et al., 2010; Humpel et al., 2002; Lees et al., 2007). Our findings support the notion that attachment to, perceived attractiveness of, and familiarity with neighborhood environments encourage older adults' outings and walking in the community. They were active in pleasant, comfortable, and nostalgic environments, rather than attempting to change their routine to utilize new or unfamiliar resources. This study adds that older adults would not be active in community places where "socially inappropriate" behaviors, for example, smoking, alcohol drinking, betting on games, and flirting, were performed, observed, or tolerated. Civil order and the maintenance and management of environments contribute to the pleasantness and safety, and subsequently encourage, PA (Yoo, 2016). Health promotion efforts should consider coordinating conflict resolution strategies when a community disagrees on how to foster PA-promoting environments.

It is noteworthy that the perceived environmental attributes conducive to the PA of older adults coexist in their interrelations. The perceived accessibility to PA-related resources in this study consisted of three interrelated domains. The interrelations between the perceived accessibility and attractiveness influenced the older adults' engagement in active lifestyle. Qualitative methods were useful in exploring and describing the interrelations. Moreover, applying multiple qualitative methods, particularly combining descriptive and spatial methods, enhances the richness of information and comprehensive interpretation of the community context (Moran et al., 2014; Van Cauwenberg et al., 2012). Utilizing diverse data sources is advantageous in triangulating results to reinforce the trustworthiness of qualitative research (Meijer et al., 2002). The method is also advantageous as a public health effort to be engaged with a community in research. In this study, verbal descriptions and explanations in the individual interviews and focus groups were matched, compared, and supplemented by spatial information acquired by touring and mapping. The researchers' touring of the community, both alone and with the interviewees, strengthened their understanding of the community environment, such as the atmosphere, crowdedness, noises, slopes, and speed, in ways attainable only by direct observation. By comparing the information marked on the interviewees' maps and their georeferenced digital version, we could determine the actual distance, size, and distribution of community resources and how the older adults perceive them spatially. This way of utilizing mapping holds potential in that qualitative geographic information system (GIS) approaches (Wridt, 2010) and currently advancing GIS approaches can be synergistically applied to investigating PA patterns and associated environmental characteristics. Future efforts may further consider applying other spatial approaches in a qualitative study, such as participatory photography and GPS data.

Analytic frameworks for multimethod qualitative research on PA, however, have not been discussed greatly so far. Future efforts are anticipated for establishing analytic frameworks for multimethod qualitative research that integrates descriptive and spatial methods. Another limitation of the study is that data collection was conducted mostly in the spring and autumn. Thereby, more active PA patterns in warmer seasons might have been reflected in the study results, whilst the PA of older adults in winter was not covered. With the aim to explore the perceived environmental characteristics associated with the actual practice of PA among older adults in an urban community, this study was conducted with a purposive sample who were physically active and capable of communicating verbally and visually at the time. This study did not consider the morbidity and medication use of the elderly participants.

The PA of the elderly with difficulties in walking was not addressed in this study. A separate research aim and methodological considerations are called for to further study this area of the elderly population. Lastly, this study was conducted with urban seniors in Seoul with long-term residency in various types of housing, in a community closely located to a mountain and streams. This specific setting could have contributed to creating a unique community context; thus, caution is necessary for interpreting and applying the results.

5. Conclusions

This study contributes to health promotion by suggesting important attributes of an urban neighborhood environment influencing the PA of older adults. The meaning and practice of the PA of older adults should be understood in the context of their lives. The community in this study was built with the elements of compact urban design, for example, a range of housing types, available public transit, diverse community resources in close proximity, and green space. In such a community, walking was the main type of PA, and the socio-cultural environment and its perception of the elderly residents mattered for developing the meaning and practice of PA. Strategies to generate more movement and walking in the everyday lives of older adults should be at the core of health promotion efforts and neighborhood design, to diversify the types and locations of communal activities, and to enhance walkability in the community. Health promotion strategies should utilize social activities and events in the community that bring older adults out of their homes as opportunities for PA. Community resources conducive to the PA of older adults should be managed to ensure safety, cleanliness, attractiveness, interestingness, and accessibility. New and re-development plans of urban environments are recommended to respect the community contexts that older adults feel attached to and familiar with, since they can reinforce the active lifestyle of older adults. That is, "how" the community environment and resources are utilized, maintained, and perceived is an instrumental determinant of PA as much as "what" and "how many" of those are established "where". Therefore, effective planning and support for a community environment to promote PA depends on intersectoral, interdisciplinary collaboration. Since qualitative multimethod approaches hold significant potential in building contextual understanding, enhancing environmental assessment, and conducting participatory planning for community health promotion, further research is warranted to advance the methodology and implementation.

Transparency document

The [Transparency document](#) associated with this article can be found in online version.

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