Integrated elderly park model with social interaction qualities

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Abstract. The increased longer life expectancy of the elderly is a positive thing though it requires more attention related to the quality of life. The decrease of physical capability will also affect the psychological conditions if they have to depend on others. Activities that involve social interaction of the elderly could minimise loneliness and tend to improve the quality of life. A pleasant and friendly environment for the elderly will help to reduce the level of dependence of the elderly on others. This research takes place Lippo Karawaci as a case study. This neighbourhood has been developed since 1993 and tends to have more ageing population recently. Majority of the elderly are still socially active in exercising and engaging with each other. However, they use residual spaces that are not particularly designed to meet their needs. This study aims to observe the activities, social interactions and how they use the space. The process begins with studying the profiles, activities, needs of the elderly and their spatial use patterns. The descriptive interpretative analysis finds trends in spatial use patterns in residential areas. The result of this study is a model of integrated elderly park that can be applied to residential areas.

Keyword: elderly park, social interaction, neighbourhood

1. Introduction

Improving health services and advancing science provide a higher life expectancy for the elderly population. Since 2015, Asian and Indonesia have entered the ageing population considering the population over 60 years has exceeded 7% [1]. The increase in life expectancy increases the elderly population as well, thus until the year 2020 will be more than 10% of people aged over 60 [2]. Special attention regarding the needs of the elderly will help them experience a higher quality of life. Older people need to be able to exercise, have fresh air and exposed to sunlight, or meet up with friends. Ageing causes some physical ability changes, including multiple minor impairments in hearing, eyesight, dexterity, mobility and memory [3, p. 7]. Physical limitations and mobility should not be an obstacle for them to continue living their social life and community well. Therefore, well-designed outdoor environment that promotes independent mobility with safety issues is crucial to prevent further functional disability of the elderly [4]. The attention that addresses their needs begins from the residential environment as the smallest social space of the elderly.

Open space is an essential element of the urban form in creating an age-friendly city. Most of the urban open space provides little detail on how the design can be fit to the elderly needs. The way of how...
the elderly use and what are they preferences about open space are influenced by socio-demographic and cultural characteristics [5]–[9]. Elderly had specific open space and physical activity needs in and near parks that also compatible with a younger age group of people [10]. It is essential to identify the community characteristics accurately and needs to create an active senior park. There are several questions about how an active senior park supposed to be designed. The first question is about how is their physical characteristic related to the way they use space and interact with each other? The second is to find the important aspect of the community in using public space?

This study began with a literature review to find what most crucial aspect in designing an elderly park and continue with collecting data from a group of seniors who use public space actively. This study aims to observe the activities, social interactions and how they use the space to find what is a specific important aspect in the community. This research is part of a community service project to design an integrative senior park in Lippo Karawaci residential area.

2. Characteristic and Needs of elderly
There are several aspects that need to be considered related to the characteristics and needs of the elderly, including physical, social, and recreational activities. After conducting some literature review, it was found out how these aspects are related to the activities of the elderly in public spaces.

2.1. The physical characteristic of older adult
Physical characteristic is a crucial aspect to examine since physical decline experienced by older people [3, pp. 24–25]. There are several physical declines need to be considered, such as strength and stamina, mobility difficulties, sensory impairment and bowel and bladder weakness [3, pp. 24–26].

In general, older people experience decreasing ability to perform some actions regarding strength and stamina such as lifting, climbing, pulling or pushing. The researchers carefully noted the "normal," age-related biological changes with increasing age: reduction in muscle strength; higher levels of fatigue; reductions in agility, coordination, equilibrium, flexibility, joint mobility and increased rigidity in the tendons [5, p. 19]. Lower ability regarding strength and stamina need to be responded by design. It is not solely for movement, yet it also needed to accommodate good social interaction. For example, it will be easier for them to communicate while they have the same eye level position with the other person. Thus, proper interaction posture may reduce the physical effort for the elderly.

Mobility difficulties will be one of the elderly physical characteristics follow their lower ability to act on lower strength and stamina. They can walk only in a certain short distance and cannot tolerate uneven surface. Many older people cannot walk longer than 10 minutes without rest [3, p. 25]. This issue leads to giving more attention not only to the park itself but to the way older people could access the park from their home. It is vital to give a sense of safety for the elderly while accessing the park. Mobility issue also relates to the routes, ups and downs of the circulation path. Thus a bad design can affect the desire to move or going to the park even though it is quite close.

Hearing problem is common for older people. It makes it difficult to distinguish a particular voice or sound from general background noise, communication problems, confusion and disorientation [3, p. 25]. Older people with hearing limitation tend to touch each other in their social interaction. Thus they require closer distance and specific pleasant position while they interact with each other. People with partial hearing and sight limitation need to have better support for maintaining interpersonal communication [11, p. 165].

The visual problem of older people may increase the risk to fall over. Visual impair will cause sensitivity to glare, and difficulty to focus when moving between dark shadow and bright light [3, p. 25]. The visual problem affects the way the elderly deal with depth perception when seeing a contrast colour or pattern. Deep shadows contrasting with light will be seen as level. Using the same colour for the floor in the sitting area is recommended to facilitate the identification of its use. The use of different colours for urban furniture, preferably contrasting colours to the floor, will also help the elderly with
visual impairment [12, p. 3832]. Therefore, colour implementation design strategy should be taken into account in design that will help the elderly with visual impairment.

Bowel and bladder become weaker when someone is getting older. It causes older people generally need to use toilets more than younger adults [3, p. 26]. A toilet is a critical facility needed for older people in order to make them more relax while using the public space.

2.2. Elderly Activities, preferences, and social interaction

Many activities can be suggested for elderly related to open space and their preference for engaging with nature. They need to go outside and do some activities regarding their biological, psychological, and social needs. It can be walking, light and low impact exercise, get fresh air and enjoy nature, and the most important is to meet and interact with others. Demographic characteristics of elders associate with physical activity and park use in varied ways suggesting a diversity of motivation to engage in physical activity and park use [5, p. 29]. Some research found different activities and preferences according to their culture and background. Walking is the most common physical activity of elderly in open space or park. The research found that the supportiveness of neighbourhood environments was a significant predictor of older people's walking activity regardless of their age, sex, living arrangements, living alone or not, education, former occupation and functional status [13, p. 169], furthermore, density, street connectivity, land use mix will affect more to walkability [14]. It is essential to create a pleasant journey from home to the park for a complete experience.

2.3. Event and celebration as recreational purposes in public space

Events and celebrations in public spaces are often held for various purposes. It can be a temporary or regularly events that promote new activities in one urban area [15]. In term of public space as a place for event, the visitor can be either performers or spectators [16]. This kind of urban public space setting may promote interaction and engagement, which can be beneficial interaction [16]. Researchers also found significant positive effects of neighbourhood open space on life satisfaction. They suggested that social interaction may be one of several mechanisms explaining the relationship, however, perceiving open spaces and parks as social venues affects more than the elders' experience of pleasure and "sociality" [5, p. 21].

3. Method

Lippo Karawaci is a residential area of approximately 500Ha located in Tangerang Regency, which has been built since 1993. After more than 25 years of establishment, this neighbourhood becomes a home for residents who are entering their retirement age. Based on evaluations from the management, not all areas in this residential area are well utilized. Several vacant areas are empty and not well functioned. This kind of lots seems to have some potentials to be utilised more optimally to support the community needs, especially the elderly. There are some groups of senior residents who use open space regularly for their activities (Fig.1).

Figure 1. The activities of the elderly community at a residual space around the neighbourhood
This study aims to seek the senior community’s needs by observing their activities and their preferences in using space. Data were collected through observation and survey. The observation was done to obtain information related to daily community activities in outdoor spaces. During the observation, a set of questionnaire was distributed. The questionnaire was designed to gather information related to 1) the elderly profile, such as age, sex, employment status, and living conditions; 2) the elderly overall health conditions, such as their visual, memory and mobility abilities, were also recorded; the participation in the community activities; and their outdoor activities and experiences. In addition to the questionnaire, we also conducted interviews and focus group discussions on gathering more in-depth information regarding the specific needs and preferences for an outdoor space. During the focus group discussion, each respondent was asked about his/her perceptions and experiences while using public open space. They were asked to describe the characteristics of a pleasant environment and the bad one. We also conducted the visioning exercise to understand what are the future elderly park that they envisioned to have. There were 55 elderly including 11 males and 44 females, aged 55 to 80 years old, participated in this study. Most of the participants had been lived in this residential area for more than five years. They all participated actively in the community activities around their neighbourhood.

All data collections were analysed and categorised into park elements (PE), park activity (PA) and park qualities (PQ). By categorising, we were able to sort and systematised the priority of needs, based on health or active living, social interactions or social values, and play or recreation purposes.

4. Result and Discussion
Observation of physical characteristics of the senior residents found that 85% of the respondents had moderate to good visual ability, and only 15% had poor visual ability; 95% of respondents had moderate to good memory ability, and 85% respondents had moderate to good walking ability (Fig. 2).

![Figure 2. Physical characteristic chart of 55 respondents](image)

Physical characteristics observation indicated that most of the senior residents still had decent visual ability. They also had a good memory and walking ability. Since they had good physical ability, most of them had the mobility to travel to public open space either alone or accompanied by friends. For those who had walking or mobility problems had less physical activities. They tended to do creative sedentary activities related to music or other activities which did not need much physical effort. Elderly who still had good walking ability tended to do physical activities in outdoor spaces more frequently. There were some activities initiated by the community in a public open space, such as simple exercise, Tai Chi, and walking. Besides doing exercise or physical activities, all of the participants expressed their love to gather and meet friends. After exercise, they regularly had breakfast together provided by one of the community members. Some respondents said that they did not doing many physical activities because they could not reach open space or park easily due to the distance. They hope to have a park within walking distance so they could reach it without a car or public transportation.

This study identified three kinds of activities regarding public open space percept by respondents—first, physical activities such as exercise and other physical activities. Second, social activities and interaction such as gathering, meeting friends, event and celebration, community and social service. Last, recreation activities such as enjoy nature and market place.
The focus group discussion found that some respondent perceive public open space as an event and celebration instead of only as a place for meeting friends. They also thought social or community service as a possible activity to do in public open space. The respondents also indicated that several negative experiences they concerned when using public open space. Those are related to facilities such as no toilet, lack of cleanliness, no shading or shelter, and lack of safety. They suggested that public open space for the elderly should be separated from younger age user to accommodate different pace. There were some preferable features they expected to see at public open space, such as a water feature, a relatively flat track, more sitting facilities, and multimedia facility to support their activities. They also indicated that it was essential to have a transitional space between different pace, especially between outside and inside the park.

Figure 3. Model Diagram of Integrative elderly Park created base on three layers of needs

This study proposed a model diagram of the integrative elderly park. The model was created base on three layers of facilities that accommodated physical needs, social needs, and recreational needs—the first layer composed of the elements that accommodating basic physical needs for the elderly park. The elements should fulfil all basic needs for activities, such as clear and easy accessibility, safety and flat or gently sloping path, bench, shading and shelter, toilet, and exercise area. The second layer was related to elements supporting social needs. They included a different choice of activity, a specific area for events and celebrations, a separate area for younger with a different pace of mobility and activity. The service facilities such as accessibility, shelter, toilet, and walking path should be adjusted to the configuration that met the need for social interaction qualities. The last layer was additional elements to
complement the park as a pleasant recreational place. The park should pay attention to details that would enhance the park recreational qualities, such as specific vegetation with aesthetic value, water feature, optional furniture and ornaments.

5. Conclusion
This study concludes that most of the respondents who had moderate and reasonable physical ability had been actively and regularly used public open space. Therefore, the elderly park should be designed to promote independent mobility with safety issues to prevent further functional disability of the elderly. Based on the findings that there were more than one community groups with different interests and activities; hence the elderly park needs to provide different areas to exercise at the same time. Meeting others and mingling with others, as well as holding an event or celebration were indicated as the favourite activities in outdoor spaces besides exercising. Then, the elderly park should promote not as a place only for physical activities but also accommodate social and event or celebration activities. Therefore, this study concludes with a model of integrative elderly park that composed of three layers of elements that accommodate physical needs, social needs, and recreational needs. This study contributes to the need for more attention in designing an elderly community park in a neighbourhood that not only to accommodate their activities but also to encourage them to use the park.

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References
[1] Kementerian Kesehatan RI, ‘Analisis Lansia di Indonesia’, Kementerian Kesehatan Republik Indonesia, 2018.
[2] Pusat Data dan Informasi Kementerian kesehatan Republik Indonesia, ‘Situasi Lanjut Usia (Lansia) di Indonesia’, Jakarta.
[3] E. Burton and L. Mitchell, Inclusive urban design: streets for life. Amsterdamb: Architectural Press [u.a.], 2006.
[4] A. Ståhl, G. Carlsson, P. Hovbrandt, and S. Iwarsson, “Let’s go for a walk!”: identification and prioritisation of accessibility and safety measures involving elderly people in a residential area’, Eur J Ageing, vol. 5, no. 3, pp. 265–273, Sep. 2008, doi: 10.1007/s10433-008-0091-7.
[5] A. Loukaitou-Sideris, L. Levy-Storms, and M. Brozen, Placemaking for an Aging Population: Guidelines for Senior-Friendly Parks. Los Angeles: UCLA Luskin School of Public Affairs, 2014.
[6] Y. Zhai, K. Li, and J. Liu, ‘A Conceptual Guideline to Age-Friendly Outdoor Space Development in China: How Do Chinese Seniors Use the Urban Comprehensive Park? A Focus on Time, Place, and Activities’, Sustainability, vol. 10, no. 10, p. 3678, Oct. 2018, doi: 10.3390/su10103678.
[7] M. Bao, ‘Analysis of Green Space Design in Residential Areas Based on Characteristics of the Elderly’, presented at the Proceedings of the 3rd International Conference on Culture, Education and Economic Development of Modern Society (ICCESE 2019), Moscow, Russia, 2019, doi: 10.2991/iccese-19.2019.123.
[8] A. Loukaitou-Sideris, L. Levy-Storms, L. Chen, and M. Brozen, ‘Parks for an Aging Population: Needs and Preferences of Low-Income Seniors in Los Angeles’, Journal of the American Planning Association, vol. 82, no. 3, pp. 236–251, Summer 2016, doi: 10.1080/01944363.2016.1163238.
[9] P. I. Pratiwi and K. Furuya, ‘The Neighbourhood Park Preferences and its Factors among Elderly Residents in Tokiwadaira, Japan’, AjBeS, vol. 4, no. 16, p. 64, Apr. 2019, doi: 10.21834/ajbes.v4i16.178.
[10] L. Levy-Storms, L. Chen, and A. Loukaitou-Sideris, ‘Older Adults’ Needs and Preferences for Open Space and Physical Activity in and Near Parks: A Systematic Review’, Journal of Aging and Physical Activity, vol. 26, no. 4, pp. 682–696, Oct. 2018, doi: 10.1123/japa.2016-0354.

[11] E. Steinfeld, Universal design: creating inclusive environments. Hoboken: John Wiley & Sons, Inc, 2012.

[12] M. V. P. de Oliveira Cunha, A. D. L. Costa, and M. da costa Ireland, ‘Ergonomic aspects to be considered in planning public spaces destined for elderly people’, Work, vol. 41, pp. 3827–3833, 2012, doi: 10.3233/WOR-2012-0685-3827.

[13] T. Sugiyama and C. Ward Thompson, ‘Older people’s health, outdoor activity and supportiveness of neighbourhood environments’, Landscape and Urban Planning, vol. 83, no. 2, pp. 168–175, Nov. 2007, doi: 10.1016/j.landurbplan.2007.04.002.

[14] L. D. Frank, T. L. Schmid, J. F. Sallis, J. Chapman, and B. E. Saelens, ‘Linking objectively measured physical activity with objectively measured urban form’, American Journal of Preventive Medicine, vol. 28, no. 2, pp. 117–125, Feb. 2005, doi: 10.1016/j.amepre.2004.11.001.

[15] G. Richards, ‘Events in the City: Using Public Spaces as Event Venues’, The London Journal, vol. 42, no. 1, pp. 101–103, Jan. 2017, doi: 10.1080/03058034.2017.1282132.

[16] L. Calvi, ‘A performance-based approach for interactions in public spaces’, Journal of Audience and Reception Studies, vol. 10, no. 2, Nov. 2013, [Online]. Available: https://www.participations.org/Volume%2010/Issue%202/14.pdf.