

Perception of Green Open Space as Medium of Therapy for Elderly

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Abstract. The physical changes of the elderly are very visible when walking, because of the generated function of joints. The decline in various sensory functions causes the elderly to be easily senile. An elderly person who is in a green open space will have a different environmental perception from other elderly people. Differences in perception due to different cultural backgrounds, reasoning and experiences. This research is a consecutive research of previous preliminary one conducted on the elderly. The data obtained is the result of the perception of the elderly in the green open space by means of interviews. Physical data from green open spaces in the home environment, in the area around the house and outside the residential area are gathered through direct survey and from photographs of respondents. The results of the perception of the interaction between the elderly and nature in the green open space have benefits in the term of physical, psychological and social at the same time.

1 Introduction

The aging process is a natural process in all living things [1]. The aging process cannot be avoided, but what can be done by human is to prevent its appearance in the earlier time. Someone who is at the age of elderly experiences physical, cognitive and socio-emotional deterioration. These physical, cognitive, and socio-emotional damage apparently starts at the age of 60. Cognitive changes in the elderly cause forgetfulness and socio-emotional changes reflected by anxiety, sadness, feelings of fear and anger. The continuous decline in various sensory functions results on the vision which begins to blur, hearing is lacking, the motion has begun to slow, fatigue and the joints of the elderly leg have a limited range of motion. Decrease or loss of various functions also happen to the elderly such as loss of flexibility, physical strength, endurance and loss of memory. This decrease can be seen physically and at the same time affects one's emotion. Emotions of the elderly who feel lonely, uncomfortable and safe, lack of confidence and dependence cause easy stress and depression. Some research that has been conducted show that gardening or being in a green open space can be one way to reduce stress. Elderly people who are easily stressed need to do gardening activities which benefit their physical, emotional, social and spiritual function [2]. The research that has been done by Othman [3], that in order to improve the elderly to interact with the green outer space, it is necessary to provide attractive green open space

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conditions. Parks/gardens with green grass, shady trees, ponds and the sound of singing birds are the attraction of the elderly to enjoy green open spaces and as physical, psychological and social therapies. The purpose of this study was to find out the various perceptions of elderly respondents in Yogyakarta due to their interaction with green open spaces around their homes and areas outside their homes.

2 Method

2.1 Data gathering

Respondents are members of the GGC (Golden Geriatric Club) Yogyakarta. GGC has 28 members, aged over 55 years. Respondents were chosen purposively by criteria: a. have a garden in his/her yard, and b. active social activities. The sample respondents were 11 people, 7 elderly people living in housing complexes and 4 people not living in housing complexes. Data to find out green open space in elderly homes was collected by direct survey. Interviews with respondents were also conducted to find out the respondents' daily activities, activities in green open spaces and their perceptions of interactions with nature. Interaction activities between the elderly and nature were taken in the form of photos.

2.2 Analysis

The survey results of the activities of the elderly in green open spaces were then grouped and analyzed with related theories. The next stage was interpretation of data in terms of perceptions and benefits of interactions between elderly and nature as a therapeutic medium. In the final stage the goal of the research was to know the elements of green open space supporting therapeutic activity.

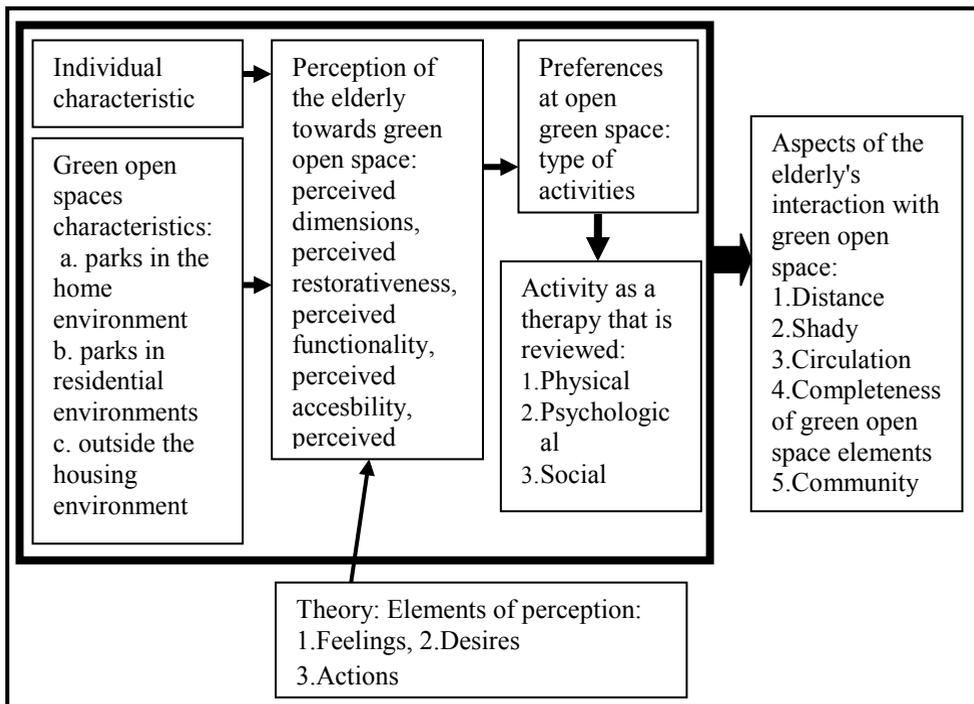


Fig. 1. Scheme Method

3. Theoretical Review

3.1 Elderly characteristic

Elderly is divided into 3 levels, namely: a. Elderly age: 60-70 years, old age: 75-90 years and very old age (very old): over 90 [4]. Elderly people, namely people who experience physical changes, cognitive and socio-emotional changes, physical problems in question, have a decrease in various sensory functions, health conditions, for example: motion has begun to slow, easy tired. Elderly foot joints have a limited range of motion, the symptoms of forgetting in the elderly occur due to cognitive changes and socio-emotional changes characterized by anxiety, sadness, feelings of fear and anger [5].

3.2 Green open space

Definitively green openspaces are areas or land surface areas dominated by plants for the protection function of certain habitats, and/or environmental/city facilities, and/or securing infrastructure networks, and or agricultural cultivation [6]. The function of green open space is also in addition to improve the quality of the atmosphere, support the sustainability of water and soil, and in the midst of the urban ecosystem also to improve the quality of the city landscape.

In general, the desired benefits are in the form of obtaining conditions and or an atmosphere that is to build physical and spiritual health of humans [6]:

1. Increased health and environmental freshness
2. Creation of vista space arrangement
3. Creation of space for environmental education.

3.3 Perception of green open space

Environmental perception is the interpretation of an individual's setting, based on the cultural background, reasoning, and experience of the individual [7]. Each individual has a different environmental perception, because of different cultural backgrounds, reasoning and experiences. It is possible that some groups of individuals have the same tendency toward environmental perception because of their similar cultural background, reason and experience. Perceived environment is a product or form of perception of the environment of a person or group of people. Environmental perception includes cognitive, affective, and cognitive processes of a person or group of people towards the environment. The cognition process includes perceiving, understanding, and thinking about an environment. The affection process includes the process of feeling and emotion, desire, and values about the environment. The process of cognition involves the emergence of actions, treatment of the environment in response to cognition and affection processes.

A framework that shows the link between perceptions, preferences and quality of green spaces according to individual characteristics has been compiled from the results of a review of theories from three databases and snowballing techniques [8]. Framework includes four dimensions:

1. Individual characteristic: age, gender, cultural background, socioeconomic status, place of residence, marital status
2. Greenspace characteristics: condition, biodiversity, accessibility, safety, facilities and program, size and type, quality and attractiveness, walkability,
3. Preferences of greenspace: type of activities

4. Perceptions of greenspaces: perceived sensory dimensions, visitors attitude and orientation, perceived restorativeness, perceived functionality, perceived accesbility, perceived safety

3.4 Green open space as medium therapy

The study revealed that gardening can be a possible coping strategy for stressful life experiences and can be beneficial for the physical, emotional, social and spiritual well being. [2]

Benefits of the interaction function of people and plants [2]

1. Physical benefits:
Nature can relieve stress. The green environment in general can support people to do physical activities. Physical activity in a green environment has a positive effect for mental health, reducing anxiety and depression.
2. Mental benefits:
The beauty of nature, color, smell from the garden enhances tranquility and pleasure. The beauty of the green environment gives a feeling of relaxation, slowing down the deterioration of physical and mental aging conditions for the elderly.
3. Social benefits:
Social interactions to reduce feelings of loneliness, depression and loss of cognitive function for the elderly.

Gardens seem to be able to reduce stress in several ways: [9]

1. By simply allowing views of a green space or a natural scene
Many studies show that simply looking at a green space or a natural landscape from a window can relax and reduce stress.
2. By enjoying natural scenery. Someone who is in a green open space, even though just sitting around, can feel relaxed, reduce stress and recover himself for healing after illness.
3. By actively engaging people in natural setting
Someone will be more effective in reducing stress, if she or he puts her or himself in a green area and actively cares for plants together with others. Gardening is a physical activity that uses the upper and lower body to do some activities such as digging, stirring compost or sweeping. Physical activity in a green open space can be divided into moderate and low intensity physical activity. Gardening activities such as cleaning the land, mixing soil, filling pots with soil and planting seeds with standing or squatting.

4 Data and discussion

4.1 Individual characteristic

Elderly in this research was taken as a respondent who are 11 people, aged between 59 years to 85.5 years. All respondents were women, with the status of three of them were still married. Eleven of these elderly people have good health conditions in case they can still do elderly sports, which is one of the GGC programs. All respondents actively attended other GGC program activities, which are related to health, religion and art. In addition to participating in the GGC program which is only held once in every two weeks, respondents conduct other sports activities, such as walking, tai chi or cycling. Seven

elderly people live in a housing complex and four people do not live in a housing complex. It is informed that from seven people living in a housing complex, 2 of them are in the area of Banteng 3 housing, 3 of them live in UGM lecturer housing, 1 person lives in the pandeansari housing and 1 person lives in pogung housing.

4.2 Characteristics of respondents' green open spaces

Eleven respondents have a garden in the yard that varies: small category (4-12 m²) and large (over 12 m²). Green areas or gardens around the house have a variety of plants, which is not just ornamental plants but also vegetable, medicinal and fruit plants. The circulation path between plants in green open space is arranged so that it is comfortable and safe to pass. The circulation path is hardened so it is not slippery.



Fig.2. Circulation path in green open space

There were two respondents who used the front fence to plant land. They maximize the types of plants planted, in addition to ornamental plants, they also plant chili, lime and pandanus.



Fig. 3. Make use of the land in front of the house fence to plant

4.3 Elderly activities in green open space as physical therapy

All respondents took care of the green open space located in front of her house or in front of the fence. Respondents planted ornamental plants, vegetables, kitchen herbs and medicinal plants. Two respondents only watered the plants because their knee sometimes

hurts and it is difficult to squat. Other respondents can treat plants from changing media, planting, watering and picking up dried leaves.



Fig.3. Physical activity in green open space: caring for plants

A respondent who is 78 years old still loves to ride bicycles outside his home environment, which is at UGM in the morning at 6:00 to 7:00. This activity is done by the elderly lived in Terban area, close to the housing complex of UGM Sekip lecturers. In addition to carry out physical activities namely cycling, the woman distribute food to the street sweeper and security guard. When cycling, the elderly stops by in a green open space to enjoy fresh green leaves, colorful flowers, bird sounds and fresh air. The road that is passed flat is safe and comfortable for cycling for the elderly.

Accessibility to the outside of the home environment needs to be comfortable and safe to support the needs of the elderly who have decreased their physical condition [2]. Marcus [10] also describes that the use of green open space can be increased for the elderly if conditions provide comfort, safety, security and ease of access. Circulation for pedestrians also needs to be considered, namely the surface for walking, stairs, handles and seating. Being in a green open space with sun exposure is very beneficial because it is a source of Vitamin D. Activities carried out in the morning show they need a calm, cool and calm atmosphere.



Fig.4. Physical activity cycling in a green open space outside the home

4.4 Activities of the elderly in green open space as psychological therapy

Respondents stated that seeing green leaves of the heart felt calm, felt fresh while grateful for God's creation. Elderly states that the park provides a lot of oxygen which is very good for health. Some elderly also say that they communicate with plants while caring for plants. The benefits of gardening aside from providing tranquility also satisfy the elderly to begin digging the soil, then planting, fertilizing, observing its growth started from the growth of the leaves and the stem as well. They can also watch the process of flowers blooming. Thus the benefits of gardening include three things, namely sensory, real and physical [2].



Fig.5. Admire flowers that are in bloom, as psychological therapy

When elderly are tired or unwell, they choose to enjoy the view at the green open space from the living room window or family room. They admit that green leaves and colorful flowers provide coolness in the eyes, so that the body relaxes and reduces stress. This shows that those activities can be a psychological therapy to accelerate healing [9].



Fig.6. Green open space in front of the house can be enjoyed from the living room window or family room

Two respondents had a fish pond in a green open space in his house. Even a respondent who has a large green open space has other animals, namely birds. It is interesting to quote from the respondents that by seeing fish in the water and listening to the sound of birdsong can make the heart calm and happy.

Respondents also visited green open spaces outside their home environment, with their family or friends. They enjoy the activity to gather while interacting socially with family and friends, walking between various plants and trees. Fresh green leaves, colorful flowers, give a feeling of happiness so that it relaxes, reduces stress and avoids senility [9].



Fig. 7. Enjoy in the green open space outside the home area

Most respondents stated that there was no attractive public green open space around the house. This is because plants are not well cared for, not beautiful, insecure access, there are no chairs for comfortable and less calm rest. This condition causes the elderly to be less interested in visiting public green open spaces around their homes. Accessibility to outer space needs to be comfortable and safe to support the needs of the elderly who have experienced a decline in physical conditions. The use of outdoor space will increase used for elderly groups to carry out activities if they have comfort, safety and ease of access. In detail, the circulation for pedestrians needs to be considered, the track surface for walking, ramp and stairs, handrail and seating [10].

4.5 Elderly activities in green open space as social therapy

The oldest respondent, Ms. Kis, who is 85.5 years old, has a large green open space in front of her house. The green open space is used for gym activities, 6 times a week from Monday to Saturday at 6:00 to 7:00. About 12 elderly friends who live around Ms. Kis's house always come. Besides gymnastics, they also chat, share experiences, and share knowledge. One of the gymnastics participants was a psychologist, who often shared important information with his friends. Meeting with fellow elderly friends gives a sense of happiness. Happiness is social therapy.



Gymnastics and sharing experiences

Share knowledge about planting by hydroponics

Fig.8. Gymnastics together and sharing knowledge in a green open space in front of the house

One respondent is a woman who has the expertise to plant by means of hydroponics. The respondent was happy to invite his friends to be given their knowledge about hydroponic plants. Meeting friends, giving the respondent a sense of happiness are considered as one form of social therapy. Respondents living in the Banteng complex carried out social activities by distributing lemongrass plants planted in the green open space in front of his house. Respondents who live in a residential complex around UGM have small water guava plants in the green open space of the front of their house which is always shared to neighbors while fruiting. A respondent who cycled away from the house to give food to sweepers and security guards, passed the road in a safe and comfortable condition. Green open spaces in some places can be reached easily, because the road is flat. Other elderly people can also visit flower gardens with a circulation path that is safe for the elderly.

5 Conclusion and recommendation

With consideration of the character of the elderly who have reduced physical, cognitive and emotional conditions, therapy is needed to reduce stress, confusion, senility and provide a sense of happiness. Low-cost therapy can take advantage of the potential for attractive, comfortable and safe green open spaces. From the results of the discussion there are some aspects of attractive green open space that have the potential characteristics functioning as a therapeutic medium: Distance, Shady, Circulation, Completeness of green open space elements and Community.

a. Distance

The ideal location of public green open spaces is the one which is near from their homes and is easily accessible to the elderly with comfortable and safe conditions. Distance factor is one of the factors that motivates the elderly to carry out activities in green open spaces, so that the elderly can be independent, not dependent on others. The existence of green open spaces is used as a place to meet friends as a means of interacting. Interaction activities carried out by the elderly is in the form of joint gymnastics, sharing experiences or knowledge as social therapy.

b. Shady

Shaded areas motivate the elderly to carry out activities in green open spaces such as Gymnastics, cycling, walking, watering plants, caring for plants or just enjoying the scenery of the green open space in front of their house. Usually they do it at six to seven, before it is getting hot. Activities in the green open space can be physical therapy.

c. Circulation

The flat path does not go up and down, the handrails, which are chosen to be not slippery are the circulation paths that needed to be considered in the public green open space. There are three therapies to visit public green open spaces namely psychological therapy, physical therapy and social therapy. Enjoying activities and enjoying green open space are considered as psychological therapy, while walking between plants is categorized as a physical therapy and walking together with friends or relatives among plants refers to social therapy.

d. Completeness of green open space elements

The complete elements of the green open space in question are not only plants, but they are also completed by ponds and animals such as birds, fish. In addition, facilities such as seating are also needed. Caring for animals in private green open spaces is considered as a physical therapy.

e. Community

Having regular activities together in green open spaces such as gymnastics, sharing experiences just sitting and chatting will provide high motivation for the elderly to visit green open spaces in order to meet with friends. Gymnastics activities are useful to function as physical therapy and meeting with friends functions as social therapy.

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