Therapeutic garden setting in post stroke rehabilitation building

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Abstract. Stroke is a condition that is caused by vessels in the brain part hampered by blood clots. The brain tissue cannot function so the impact on a person is impaired physical and cognitive impairment. Post-stroke patient is advised to undergo therapy 1x24 hours after the patient is declared eligible for therapy. In this case, the organization of the therapy room can affect the quality of a rehabilitation building. The room becomes a supporting element to facilitate therapeutic activities. It was analyzed based on standards to achieve the room requirements to facilitate therapeutic activities needed by patients. To meet the needs of rehabilitation, the therapies that are recommended to undergo the rehabilitation process are occupational therapy, physiotherapy, speech and visual, and hydrotherapy. The result in this study showed, to supporting physical therapy, post-stroke patients also need therapy to support cognitive function, by applying Therapeutic garden elements, it is expected to have influence in order to achieve maximum patient recovery process.

Keywords: Stroke, rehabilitation, therapeutic garden

1. Introduction
Stroke is a serious condition that occurs when blood supply to the brain is cut off due to blockage or rupture of blood vessels, resulting in the death of cells in some areas of the brain. Brain tissue that experiences this cannot function so that the impact caused by a stroke on a person is the onset of physical and psychological disorders. The physical impact is that the patient experiences paralysis on one side of the body, visual impairment, difficulty in communication, perception disorder, and fatigue. While the impact from the psychological side is experiencing mental decline to experience depression. This condition indirectly makes stroke sufferers unable to perform daily activities, it can be said that stroke sufferers experience disability and can even cause death.

The prevalence of Non-Communicable Diseases increased including Cancer, Heart, Stroke, Chronic Kidney Disease, Diabetes Mellitus and Hypertension. Stroke is the number two cause of death in the world after heart disease, and is also the number one cause of disability in Indonesia in both developed and developing countries. In Indonesia stroke prevalence has increased from 7 per mil (per 1,000) of population in 2013 to 10.9 per mil (per 1,000) of population in 2018. [1]

Post-stroke rehabilitation, especially in DKI Jakarta, 70% is still handled in hospital units, while 30% post-stroke rehabilitation is handled in independent stroke units, whose distribution is still limited. The rehabilitation centre is a unit that is referred by hospital for post-stroke patient has
received treatment in the initial stroke phase. The rehabilitation centre aims to restore patient life back and help prevent disability in patients. Post-stroke patients often have pressure within themselves and within the family because they feel themselves unable to carry out activities as usual. This can inhibit the rehabilitation process of post-stroke patients. In the rehabilitation process, patients can be supported not only in terms of physical therapy but also supported from psychic side therapy.

In this case the environment of rehabilitation is an important point that also needs attention. made a study of the effect of Therapeutic garden interventions on the rehabilitation process of stroke patients [2]. Therapeutic garden has an influence on the psychology of the patient, which can help reduce pain, increase attention, reduce the level of stress experienced by patients, increase the sense of socialization, self-esteem and life satisfaction. So that in the Post-Stroke Rehabilitation Center it is necessary to apply the principles of the Therapeutic Garden so that it becomes a supporting environment to influence the recovery process of post-stroke patients. It offers a locality where the patients and their healers might achieve the objectives of therapeutic process. it offers localities in order to breathe fresh air, to feel the warmth of solar beams etc. The variety of vegetation offers alternation of colours depending on the seasons and the various perfumes.

The purpose of this paper is to analyse the placing a therapeutic park as a therapeutic element that will affect the healing process of post-stroke patients during rehabilitation. It is expected to become a new design of post-stroke rehabilitation.

2. Design Method
The application of the concept of therapeutic garden is done through qualitative design methods using garden therapy design for patient’s principles [2].

| Area       | Principles                                                                 |
|------------|-----------------------------------------------------------------------------|
| Spatial    | Where there is sufficient room, divide the space so that there are sub-areas of varying size and levels of privacy. |
|            | The interior and exterior spaces should complement each other. If patients near an outdoor space have private rooms, exterior areas for social interaction and observation should be a priority |
| Garden     | Gardens may be designed and set up attractively, but people need to be aware that they exist, that they are easily accessible through entrances and paths and useable regardless of people’s |
|            | Paths must be wide enough for two wheelchairs to pass (minimum of 180 cm); they should be smooth and wide enough for a patient on a bed or gurney to be wheeled into the garden; paving joints should be narrow enough so as not to catch a cane, the wheels of a walker or an IV-pole.cm) |
|            | Fixed seating with backs for sitting in comfort is especially important for garden users who may be physically weak. |
|            | As hospital patients are often sensitive to temperature options such as sunny and shady areas should be provided. |
|            | In a setting such as a hospital, known to elevate symptoms of stress, it is essential that art, sculpture and other human-made design elements be unambiguously positive in their message. |
|            | Patients often feel both physically and psychologically vulnerable in hospitals, and a feeling of security should be provided |
|            | If a garden is to have therapeutic value in a medical setting, it needs to |
be quiet.

Lush, colorful planting that is varied and eye-catching so as to suggest the image of a garden

Plants may be experienced unconsciously as metaphors.

For all users of the garden, including the partially sighted, scented and brightly colored flowers and leaves provide an attractive sensory experience.

Quality maintenance contributes to the health of the plants, which in turn provides the maximum therapeutic benefit.

3. Result and Discussion
The Facilities for post-stroke rehabilitation service is divided into 3 types of services, as primary care, secondary care and tertiary care [3]. These facilities analysis in the therapeutic Garden zone in table 2.

| Garden location | Explanation |
|-----------------|-------------|
| 1. Main entrance and parking | Location: in the entrance area. This area is the part that welcomes patients when they first come to this post-stroke rehabilitation centre. Plant media in this position will influence on the patient's feelings. They feel more welcomed by a feeling of calm. |
| 2. Centre core | Location: in the middle of the building. The therapeutic park can be accessed by all users in this rehabilitation building, as well as a space to gather and become a park that can be used by staff. In this area the Enabling Garden function is placed (based on psychological effects, helps with physical recovery, improves physical condition based on possible activities, mental growth based on meaningful activities) |
| 3. Private | Location: in front of the patient room. It is a park created specifically for patients and can only be accessed by patients as a personal concentration, that is to concentrate on internal processes, find inner strength, and bring peace. In this area the function of the Meditative garden is placed (the garden of meditation (supporting the process of inner thought)) |
| 4. Therapy area | Location: In the middle of the therapy room. Provide a garden in the center of the therapy room to support the patient's therapeutic process. Divert the patient's attention from feeling depressed during the process of therapy. |
There are 2 sense of garden that can stimuli the patients healing process, as sense of smell and sense of vision. Table 3 illustrates the placement of the garden based on this sense relate to the spatial formation.

**Table 3. Sense of garden on spatial analysis**

**Affects the sense of smell**

To stimulate the sense of smell, plants need to be provided that can create aromatherapy, aromatherapy that is kissed by the patient can stimulate the brain to create calm. Examples of plants that can create aromatherapy:

| Plant          |
|----------------|
| Lavender       |
| Jasmine        |
| Freesia        |

The position of the plants that affect the sense of smell is placed in the private zone, which is the park facing the patient's room.

**Affects the Sense of Vision**

To stimulate the patient's sense of sight, aesthetic plants are needed that can affect the patient. Examples of aesthetic plants that can affect a patient's vision.

Aesthetic plants in the Centre core zone

| Flowering plants:          |
|----------------------------|
| Krisan                      |
| Cana Flower                 |
| Button Flower               |
| Four o'clock flower         |
| Bougainvillea              |
| Dilem                      |
| Hanjuang                   |
| Patcan Grass               |


Based on the above analysis, the concept of dividing the Therapeutic Garden based on function at a post-stroke rehabilitation centre illustrates on figure 1 and figure 2.

**Figure 1.** Therapeutic garden in Centre core

**Figure 2.** Therapeutic garden in in front of the patient room area

### 4. Conclusion

The conclusion of the design of the Post-Stroke Rehabilitation Centre is the composition of the mass formed based on the rehabilitation function by applying the Therapeutic Garden to each function so that it affects every user in each of the building's functions.

Configuration of room organization that is formed based on the needs of rehabilitation buildings, divided into 4 sections, main entrance, center core, private and therapy area. Each form a clustered space organization. It is intended that each area get visual access to the therapeutic park provided and spatial arrangement based on types of garden.

### 5. References

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