ARCHITECTURE HEALING ELEMENT: A CASE STUDY OF GARDEN IN SAN JUAN DE DIOS

[1]Nurizzati M. Yusri *[1]Khairul Asyraf Mohd Rodzi

[1]Department of Architecture,
Faculty of Civil Engineering and Built Environment,
Universiti Tun Hussein Onn Malaysia.

*Correspondence e-mail: asyrafr@uthm.uthm.edu.my

ABSTRACT

Plants are gift from God to mankind because they are not only providing us with food, shelter, medicine, fiber, and fuel, but also can be treated as a medicine for people who are in a stress environment. They work as a healing element, creating a pleasant and calming area in a negative surrounding. The aim of this study is to investigate the importance of plants and gardens in a healthcare design and how they affect the conditions of the occupants in a building. Literature review on Said (2003), Ulrich (1999) (2002), and DuBose (2011) are carried out to understand a definition as well as connection between architecture features and healing element. A case study also is conducted focusing on gardens in a healthcare facility which is Memorial of the Maritime Sanatorium of San Juan de Dios, Chile. From the design features and spatial quality in the garden, the variables then connected with healing constructs based on relationship between architectural features and healing constructs framework by DuBose et al., 2011. From the analysis, the feature in the garden can be a reference for future consideration, especially on design and planning.

Keywords: *Plants, Healing Element, Healthcare, Chile.*

INTRODUCTION

According to World Health Population, health is defined as a state of complete physical, mental, and social prosperity and not just the non-appearance of infirmity and sickness (Singh et al., 2021). Being sick and hospitalized is one of the most significant sources of stress in a person's life. This is because hospitalization frequently induces negative emotions due to numerous factors. Therefore, a Healing Architecture concept was created to overcome this problem. It can be defined as a scientifically developed concept to improve the physical and mental health of a person (Jayachandran, 2022). This concept is often applied in healthcare facilities and rehabilitation centers, and it focuses on human as the core of the issue. Therefore, the spaces are designed in a certain way with specific discipline to achieve surrounding that helps creating happiness and calmness. There are many ways that can be done to achieve this concept such as through lighting, proportion and geometric pattern, plants and greenery, as well as silence and solitude (Parshar, 2017). However, this study will be focusing on the plants and greenery aspects in a hospital. According to Sacks (2019), other than music, plants are regarded as non-pharmaceutical therapy that are very useful for patients with chronic neurological diseases. He strongly believes that nature and gardens are powerful tool in recovering patients compared to any medication.

PROBLEM STATEMENT

Over thousand years ago, humans already believe that plants and gardens are useful for patients in healthcare environments, especially in Western and Asian countries. For example, during the Middle Ages in Europe, monasteries had developed gardens with a specific purpose: to bring soothing distraction and pleasant to the patients. Furthermore, in the 1800s, hospitals in America and Europe were well known for their plants and garden features (Ulrich, 2002).

However, this feature slowly faded during the early decades of the 1900s due to great progression in medical science. This had caused the architects and hospital administrators to solely focus on creating healthcare buildings that help in reducing infection risk and kept them practical for the new medical technology. The design of hundreds of major hospitals had changed internationally due to priority given to these factors. Therefore, the concept of healing and pleasing to the occupants had shifted to a very institutional, highly stressful and did not suit the emotional needs of thepatients, their families, and the healthcare staff. However, despite all the effects caused by the traumatic hospital experience, little attention has been given to create an environment that would calm and address the emotional needs of the occupants up until recent years (Ulrich, 2002). Ulrich (2002) also stated that in recent years, a growing awareness has evolved in the healthcare community. Everyone is already concern of the need to design a space that is not just practical and hygienic, but at the same time acquires quality feature in reducing stress and pleasing. This change has been a great advancement made in the medical science world.

METHODOLOGY

According to Jansen and Warren (2020), a research methodology demonstrates how a researcher plans his study in order to obtain valid and reliable results that reflect the purposes and objectives of the research. In this study, qualitative approach is employed to gain data through literature review. This methodology is conducted through books, journal, web search and other reliable sources. Furthermore, a case study also has been conducted to understand deeper the relationship between healthcare facilities and plants. In this paper, the researcher will be focusing on the garden in the Memorial of the Maritime Sanatorium of San Juan de Dios, and how the feature contributes to the welfare of the patients. This case study will be reflected to the problem statement as well as provide a better understanding of plants and gardens design application in healthcare center.

Effect of Hospitalisation to Patients

Being sick and warded are factors that can cause stresses among human being. Hospitalization often effects patient's recovery process because of several significant factors suchas loss of privacy, loss of information, loss of control over sleeping times and eating, and difficulties in finding ways in a complex and unfamiliar hospital buildings (Said, 2003). These factors have resulted in several negative effects such as anxiety, depression, cognitive performance reduction, helplessness, increase blood pressure, suppression of immune functioning, and higher levels of circulating stress hormones (Ulrich,1999). Moreover, for young patients, the hospital environment is seen as an outsider setting that incurs torments and isolation from their families. The view of people laying on gurneys and varieties of apparatus used for treatment scared not only young patients but also the adolescent. Furthermore, the smell produced by antiseptics such as providone and iodine, tetraethyl spirit and detergents used in the ward terrifies toddlers and children especially for the first timer (Said, 2003). They may relate the

precarious odors with pain and suffering. Besides, hospitalized with other patients who are strangers may also create an alarming experience. They may also translate a cry from another patient as a signal of a feeling of pain and desertion. Lastly, Said (2003) stated that frequent visits by nurses and doctors are seen as a negative events whereby they are unwillingly have to take medicine or they have to face the pain by the injection.

Effects of Plants on Hospital Occupants

According to Ulrich (2002), studies have been carried out to patients and non-patients comparing the effects on them when they were looking at environment which mostly covered with greenery, flowers, and water versus a view with lacking nature such as buildings, rooms, and towns. The result shows that greenery view is significantly more powerful in promoting recovery or restoration from stress. There is evidence showing that looking to the nature scenes within three to five minutes helps to restore the emotional or psychological, and physiological changes (Ulrich, 2002). In terms of the emotional or psychological restoration, views from greenery or garden-like features help increasing the positive feelings such as calm and pleasing. It also aids in decreasing negative feelings for instance anger, fear, and sadness. Concerning the second point which is physiological manifestations of stress recovery, clinical and laboratory investigations show that looking to nature settings give positive changes to the blood pressure, muscle tension, heart activity, and brain electrical activity (Ulrich, 2002).

Patients Responses Towards The Garden

According to Said (2003) who studied on the young patients' responses towards the therapeutic garden in two hospitals which are Batu Pahat Hospital and Segamat Hospital, it was found that hospitalized children showed positive psychological responses such as less crying as they can play outside the ward, be physically active, more obedient, and cooperative toward medication. Therefore, it is easier to manage them. This result is based on the observation on the patients in the duration of eight weeks from the doctors, nurses, and ward staff. A total of 43 responses gained from the survey showing the level of satisfaction toward the children behavior. Said (2003) also highlighted that the staff evaluations are the proof that participating in the garden activities would encourage patients get fascinated and engaged with the outdoor environment and the features resulted in positive outcome towards the patients' behaviors that finally would increase the psychological and well-being of the patients. Figure 1 below shows the findings from the experiment.

Types of Behaviour	Strongly Disagree	Disagree	Somewhat Agree	Agree	Strongly Agree	Percentage Agree
a. Cooperative	0	0	6	27	10	100
b. Happier	0	0	1	27	10	100
c. Less Crying	0	0	3	19	21	100
d. Physically Active	0	0	12	13	17	100
e. Independent	0	1	15	19	7	98
f. Obedient	0	1	17	16	9	98

Figure 1. Responses of the doctors, nurses. And ward staffs on patients' behavior towards the garden (Said, 2003).

CASE STUDY

Memorial of the Maritime Sanatorium of San Juan de Dios is selected for this case study. The hospital is located in the Valparaiso Region of Chile, where the site is situated in a gorge with sweeping South Pacific Ocean view as shown in Figure 2 below. Therefore, it is really suitable location for patients to relax and connect with surrounding nature.

The health facility is a non-profit institution with nearly 90 years of service, which currently accommodates children and young people with severe neurological damage and rights violations and provides them with care to improve their quality of life and meet their medical, educational, psychosocial, occupational, and inclusive needs. Users, relatives, guardians, volunteers, Special School students, and the institution's collaborators now have access to an outdoor space conceived and built to support recuperation and the growth of therapeutic activities.

(a)

(b)

Figure 2. Location of the case study. (a) The site is located near to South Pacific Ocean. (b) Bird-eye view of the hospital. (Google Maps, 2022).

This building incorporates natural spaces into hospital compound that helps to achieve effective sensory-based therapeutic treatment that has been proven to give lot of advantages to the human mind and body. After a few considerations based on the patients' conditions and the layout of the space, the project participants decided that the existing fruit trees may greatly help in sensory treatments. The garden is also equipped with three workspaces that are connected to each other by a walking trail. The design approach allows occupants to experience variety of smells, colors, and

textures during their visit in the healing garden (Truffa, 2021).

(a) (b)

Figure 3. View of Memorial of the Maritime Sanatorium of San Juan de Dios building from the healing garden (Sanadores, 2019).

Figure 4. The site plan of the Healing Garden (Truffa, 2021).

Truffa (2021) stated that the garden also consists of an area with lavender and pomegranate plants for hands-on exploration, a space for horticultural therapy and workshops. Visitors can participate in the harvesting plants and also witness the life cycle of the plants. There are lot of positive impacts towards the young patients during carrying out these activities. This physical interaction provides an educational experience, and it helps in developing their sensory and motor skills (Truffa, 2021). Besides, there are also spaces separated from the main area of the garden, provided for emotional healing surrounded with verbena bush, soapbark, and pepper trees. Visitors can also enjoy the birds chirping as there are birdhouses installed in the area.

These features at the healthcare facility are then connected with the relationship between architectural features and healing constructs framework by DuBose et al. (2011). In this framework, the author has outlined a connection between architectural variables and healing constructs. The variables then will be paired to the constructs according to the literature reviews on how a specific variable can contribute to a certain healing construct of a patient. From the research, researcher has identified spatial qualities of the healthcare facility which can be reflected to the variables. The space and the garden have provided: (1) a space that provide personal attachments (experience and secure atmosphere), (2) view to nature scenes, (3) contact to outside environment, and (4) environment that accommodate patients with declining visual, auditory, and kinesthetic senses, reflecting to the facility that provide treatment for children with severe neurological injuries. These spatial quality and features inside the garden are then connected to the healing constructs, as shown in Figure 4 below.

From the framework adapted from DuBose (2011) below, the spatial quality of the garden able to provide a certain healing element to the patients, especially involving self-efficacy, psychology, and function. According to Kent (2007), self-efficacy is defined as a situation-specific form of self-confidence. To put the framework into the research context, it is important to ensure a high self-efficacy among the children to allow them recover from the injury suffered. The framework also indicates that the view towards nature can reduce stress. The spatial connection between the building and the garden allows the patient to interact directly with the trees, flowers, and bushes. This interaction is effectively reducing the stress among the children. Activities such as planting and harvesting trees provide a significant quality of life. This activity enhances the recovery by distracting the children from the pain that they are suffering.

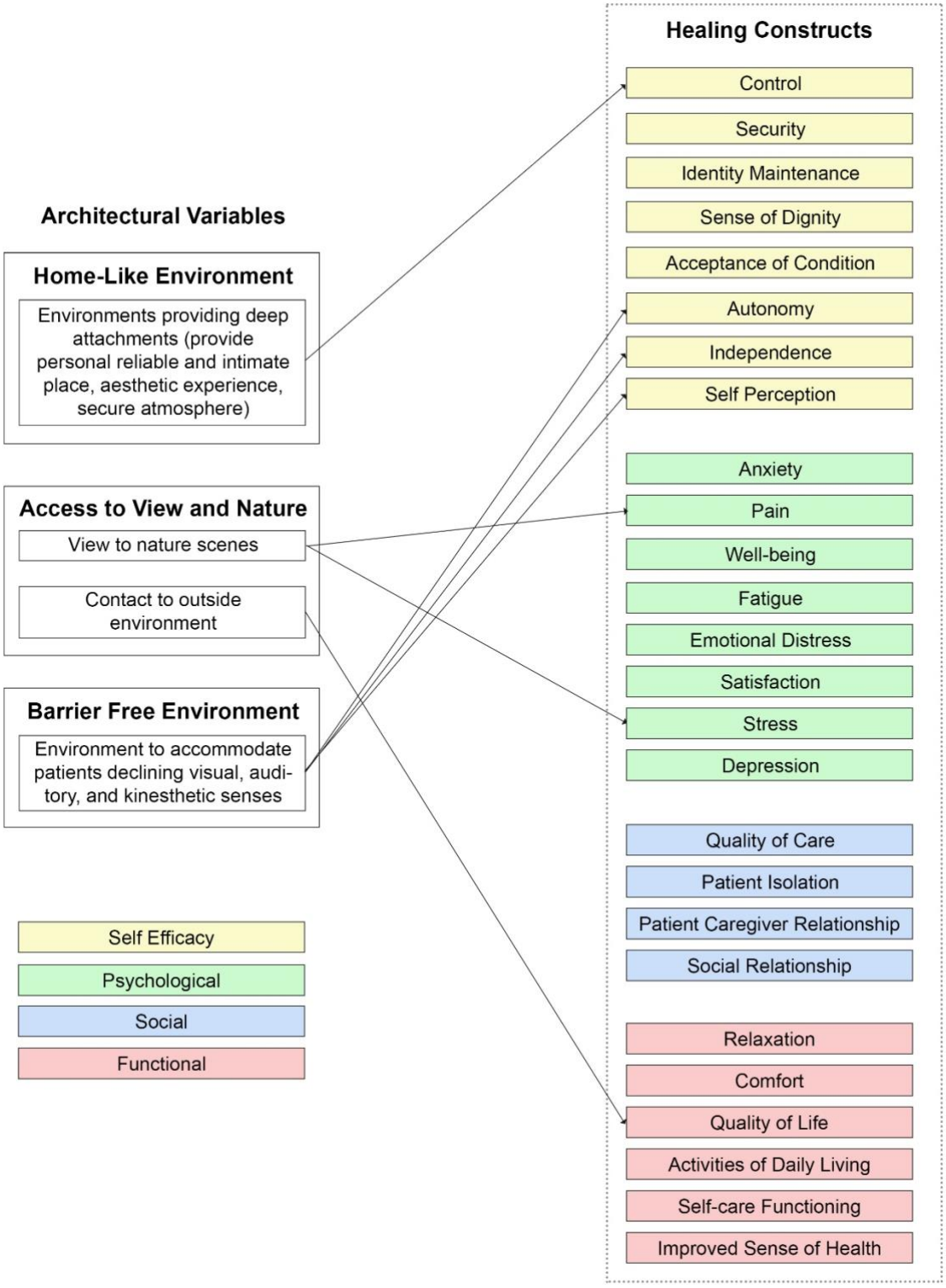

Figure 5. Relationship between architectural features and healing constructs (adapted from DuBose et al., 2011).

CONCLUSION

It is proven from studies that viewing certain types of nature or garden environment within only five minutes or less helps decrease the amount of stress of the viewers. Besides, it not only helps to calm patients, but can also aids in clinical outcomes such as reducing the amount of pain medication intake and shortening the duration of hospitalization (Ulrich, 2002). furthermore, a well-designed hospital gardens not only give remedial and wonderful nature views, but also can decrease stress and enhance clinical outcomes through other mechanisms such as rising access to social support and contribute to positive elude from unpleasant clinical settings. The design of a garden should not be bounded in a greenery notion, but the space could accommodate significant activities such as bird viewing, planting, walking, and watering the plants. These activities can distract the patients and allow them to recover instantly.

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