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DESIGN OF A HEALING GARDEN WITH A GREEN ARCHITECTURE APPROACH [AT OG HOSPITAL BINJAI]

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Abstract

The Healing Garden is a garden that specifically provides a sense of protection and comfort aimed at improving health outcomes for patients, families and hospital staff. Hospital. This hospital is located on Jl. Sport No. 1, Timbang Langkat, District. East Binjai., Binjai City, North Sumatra. This public hospital, which is accredited with 5 stars from the Hospital Accreditation Commission (KARS) and is now a type D hospital, provides treatment for general illnesses as well as internal medicine (internship). This approach to green architecture.
Keywords: *Healing garden, health, patient, hospital, green architecture*

Abstrak

Healing Garden/Taman Penyembuhan merupakan taman yang secara khusus memberikan rasa perlindungan dan kenyamanan yang bertunjuan untuk meningkatkan hasil kesehatan pada pasien, keluarga, dan staff rumah sakit. Rumah sakit. Rumah sakit ini terletak di Jl. Olahraga No. 1, Timbang Langkat, Kec. Binjai Timur., Kota Binjai, Sumatra Utara. Rumah sakit umum yang terakreditasi bintang 5 dari Komisi Akreditasi Rumah Sakit (KARS) dan kini menjadi Rumah Sakit tipe D ini melayani pengobatan penyakit umum dan juga penyakit dalam (internis). Pendekatan pada arsitektur hijau ini
Kata Kunci: Taman penyembuhan, kesehatan, pasien, Rumah sakit, Arsitektur hijau.

I. INTRODUCTION

Mental health is a crucial aspect of human life that has received increasing attention in recent decades (Ulrich, 1984). Modern developments and the dynamics of social life have encouraged society to become more aware that mental health plays a role no less vital than physical health. This awareness is reflected in the increasing number of educational content and positive activities addressing mental health issues, both in person and through various social networking platforms. This phenomenon indirectly demonstrates that mental health has become a basic need, especially for individuals struggling with various illnesses. In this context, hospital environmental design is a strategic factor that can significantly contribute to patient recovery, not only medically but also psychologically. One relevant approach is the implementation of healing gardens, specifically designed to create a therapeutic experience

through interaction with nature (Cooper Marcus & Hartig, 2006). Unlike typical gardens, which typically serve as aesthetic, recreational, or green spaces, healing gardens are designed with a psychological and medical approach. Every element, from the types of plants and lighting to the pedestrian paths and even the presence of water, serves a purpose aimed at supporting the healing process and reducing mental stress (Marcus & Sachs, 2014).

In Binjai City, no hospital has yet integrated the healing garden concept into its environmental design (Binjai City Government, 2018). Yet, such gardens have the potential to become easily accessible spaces for a wide range of people, not just patients but also their families and hospital staff. The presence of a healing garden within a hospital environment can serve as a temporary escape from psychological stress and provide a space for quiet contemplation amidst uncertain situations (Binjai City Environmental Agency, 2023). Natural elements such as natural lighting, good air circulation, green vegetation, and the presence of water in a healing garden are believed to create a conducive atmosphere for the healing process. Physiologically, natural lighting can help regulate the body's circadian rhythm, which is important for sleep quality and patient mood. Green vegetation has been shown to lower blood pressure and stress hormones like cortisol, and increase the production of serotonin, a hormone associated with feelings of calm and happiness. Water features, such as ponds or the sound of trickling water, can have a relaxing effect and help reduce anxiety. Walking paths connected to nature can encourage light activity and provide calming visual stimulation. By harmoniously combining these elements, a healing garden becomes a space that not only supports physical recovery but also strengthens patients' psychological resilience.

Scientific research supports the effectiveness of healing gardens in accelerating the healing process. Research (Ulrich, 1984) found that post-operative patients who had a view of nature from their bedroom window recovered more quickly than those without such a view. More than 60 scientific studies have shown that interaction with nature can reduce pain and stress, and boost patients' immune systems. Access to gardens has been shown to accelerate healing from surgery and infections, as well as reduce the need for painkillers, leading to fewer post-operative complications and shorter hospital stays. In addition, research by (Ulrich, 1999) showed that healing gardens increase patient comfort and reduce stress. Other studies have also shown that well-designed hospital gardens can provide benefits to

patients, their families, and hospital staff, including improved mental health, reduced anxiety, and faster recovery from illness or surgery.

In architectural studies, the concept of a healing garden is closely related to the Green Architecture approach. Green architecture is a design method that emphasizes environmental sustainability and resource conservation (Hidayat, 2016). According to Ming Kok in Anisa (2017), green architecture is a process aimed at minimizing negative environmental impacts through reduced energy consumption, efficient land use, effective waste management, and optimizing user comfort by maximizing the potential of natural elements. Therefore, a healing garden is not only part of a nature-based healing strategy but also contributes to sustainable development aligned with ecological principles. The design of a healing garden within a hospital in Binjai City is an urgent need to support the patient healing process, particularly in mental health. In addition to providing a therapeutic space for its users, the application of green architecture concepts in the design of a healing garden is also expected to be a solution to minimize the negative impact of development on the environment, while simultaneously creating a more environmentally friendly, comfortable, and humane hospital (Binjai City Government, 2020).

The development of modern landscape design in the context of healthcare demonstrates a growing interest in integrating natural elements into hospital environments as part of a holistic approach to healing (Herald Jateng, 2024). One prominent approach in this regard is the concept of the healing garden, specifically designed to provide therapeutic effects through visual, tactile, and psychological experiences gained from interacting with natural elements. Theoretical studies indicate that interaction with nature has a positive influence on psychological regulation, reducing stress hormones, and accelerating the healing process (Ulrich, 1984 and Ulrich, 1999). This approach is further strengthened by the principles of green architecture, which not only focus on energy efficiency and environmental conservation but also emphasize user comfort through optimizing natural resources such as vegetation, water, light, and air. Referring to the green architecture concept developed by Brenda and Robert Vale, the principles of sustainability, the use of natural energy, and the adaptation of buildings to their site are essential foundations in designing ecologically healthy and humane spaces (Khalis, 2020).

The main problem in this research lies in the absence of a healing garden concept at OG Hospital Binjai, even though, based on its urban and social context, the location has

significant potential to be developed into a green open space that is not only functional but also supports patient psychological recovery. Furthermore, the hospital has limited internal space and has not yet systematically adopted green architecture principles in its environmental development. This forms the basis for the research question: "How can green architecture be applied in the design of a healing garden at OG Hospital Binjai to support patient psychological healing?"

A literature review and comparative study revealed a significant gap between the theoretical planning of healing gardens and the actual situation on the ground. Many hospitals, including OG Hospital Binjai, have not yet optimally integrated green open spaces into their layouts. Previous studies by Marcus and Barnes (1999), Ulrich (1984), and Relf (2019) emphasized the importance of hospital landscape design that considers patient psychological comfort, but these have not been widely implemented in small- to medium-scale, type D hospitals in the region. This gap shows the imbalance between das sollen (what should be done based on theory and regulations) and das sein (what happens in the field), where hospitals should fulfill the principles of green hospitals and provide green open space as mandated by Law No. 26 of 2007 concerning Spatial Planning, but in reality it has not been implemented adequately, both in terms of design and hospital managerial policies (Ministry of Public Works and Public Housing of the Republic of Indonesia, 2022).

The novelty of this state-of-the-art research lies in the specific integration of the healing garden concept and green architecture principles within the context of a Type D hospital in Binjai City, a field that has not been widely studied. This research not only proposes a therapeutic landscape concept but also adapts the natural form of moringa leaves as inspiration for a spatial design that carries the symbolism of health, sustainability, and a close connection to local wisdom. This research also considers functional spatial zoning (public, semi-public, and technical), accessibility for people with disabilities, and space efficiency within the hospital's limited land area, making it a contextual and applicable solution. Unlike previous research that focused solely on the visual aspects of healing gardens, this study integrates ecological, symbolic, and socio-cultural approaches, creating a prototype hospital landscape design rooted in local needs while remaining grounded in global principles of sustainability (Jogja International Hospital (JIH), 2025).

This research addresses the gap between das sollen, the demand for environmentally friendly, nature-based healing facilities, and das sein, the lack of holistically designed healing

gardens in primary healthcare facilities. This research also expands the repertoire of landscape architecture in Indonesia by providing empirical and theoretical contributions to the design of green architecture-based healing gardens, particularly in the context of hospitals with limited scale and location.

The objectives of this research are to analyze the site to be developed into a healing garden, apply the concept with a green architecture approach to OG Binjai Hospital, and design the healing garden.

II. THEORETICAL STUDIES

The theoretical study in this research is rooted in the integration of two main concepts: healing gardens and green architecture, which complement each other in the context of designing a hospital environment that supports holistic healing (Hadi, 2021). Healing gardens are not simply green open spaces with aesthetic and recreational functions, but rather therapeutic spaces consciously designed to provide positive psychological, emotional, and physiological impacts to their users (Marcus & Sachs, 2014). This concept is based on the restorative environment theory developed by Kaplan & Kaplan (1989) and supported by seminal research by Ulrich (1984), which showed that post-operative patients who viewed natural views from their hospital windows recovered more quickly than those who did not. Elements such as green vegetation, water features, natural lighting, and pedestrian paths not only have visual value but have been shown to reduce stress hormones (cortisol), lower blood pressure, accelerate wound healing, and even improve mood and inner peace. At the same time, the concept of a healing garden cannot be separated from the sustainability framework offered by the green architecture approach, which is a design principle based on energy efficiency, minimal ecological impact, and harmony between buildings and the environment. In the context of OG Binjai Hospital, located in a tropical area with high humidity and rainfall, the application of green architecture principles such as the utilization of local vegetation, natural cross-ventilation, infiltration drainage systems, and the use of local and environmentally friendly materials are key elements in supporting the concept of a sustainable healing garden. In addition to meeting ecological needs, green architecture also addresses social and psychological challenges by creating humane and healthy spaces. This principle is reinforced by the theory of Brenda and Robert Vale (1991), which emphasizes energy efficiency, site management, the use of natural materials, and long-term sustainability as the main requirements for responsible architectural practice. Thus, this theoretical study

not only explains the importance of a healing garden as a strategy to improve patient health but also shows how the application of green architecture principles can direct the hospital landscape design process to be more contextual, efficient, healthy, and effective, in line with the paradigm of sustainable development and public health that is oriented towards the welfare of the whole human being.

III. RESEARCH METHODS

The research method used in this study is a qualitative method with a descriptive approach, which aims to gain an in-depth understanding of the site context and the design needs of a healing garden in the OG Hospital Binjai environment. Data collection was conducted through two types of data: primary data and secondary data. Primary data was obtained through direct field observations, visual documentation, surveys of existing conditions, and interviews with parties directly related to the project, such as hospital staff and related agencies. These observations focused on the physical aspects of the site, the type of existing vegetation, climate conditions, accessibility, utilities, and space requirements that support the psychological and physical healing process of patients. Meanwhile, secondary data was collected from literature studies, scientific journals, reference books, spatial planning regulations, and documentation of similar projects relevant to the theme of the healing garden and the green architecture approach. Data analysis was conducted qualitatively with reference to landscape design theories and green architecture principles, such as energy efficiency, the use of local vegetation, natural circulation of air and light, and the use of natural elements as environmental therapy. The results of this analysis process then served as the basis for developing the design concept and zoning of the garden area, including the division of public, semi-public, and technical zones. With this approach, this research not only produced an environmentally friendly conceptual design for a healing garden but also supported the patient's overall healing process, reflecting a harmonious integration between medical functions and ecological sustainability.

IV. RESEARCH RESULTS

1. Site Analysis and Functional Readiness

Geographically, the site's location is strategic due to its proximity to OG Hospital, ensuring easy access and mobility for patients, visitors, medical personnel, and hospital operational vehicles. Furthermore, the site is directly connected to a main road with sufficient width and good road conditions, facilitating transportation to and from the site. The site is

easily accessible by both private and public vehicles, further enhancing its support for hospital activities and the development of the surrounding area.

In terms of the physical characteristics of the land, the site's topography is relatively even and stable, making it relatively safe and facilitating the planning and development of the space within the site. The relatively flat surface also reduces the need for heavy earthworks, resulting in efficient construction time and costs.

Despite its potential, there are also challenges that must be addressed. One of the main obstacles to the site's development is the limited space available within the hospital area. These limitations are a particular concern, particularly in meeting the need for green open space (RTH), a crucial element in supporting comfort, environmental health, and the aesthetics of the hospital area.

Therefore, to optimally fulfill the requirements and function of green open space, additional land clearing is required in the surrounding area, which is largely residential. This process must be planned wisely to avoid disrupting the social fabric and the comfort of residents, while remaining in line with applicable spatial planning regulations in the area.

Table 1. Initial concept for developing a healing garden at OG Hospital

No	Room Name	Number of rooms	Room size (m2)	Capacity
1	Circulation and Accessibility	2 main lines	360	±10 people circulating
2	Park	3 park zones	635	±30 people in total
3	Sitting & Meditation Room	1 gazebo, 4 benches, 1 spot	270	±20 people in total
4	Water and Pool Zone	1 pool, 1 fountain	180	±10 people in the surrounding area
6	Support and Buffering	1 toilet, 1 small warehouse	180	±4 people (technical access)
7	Parking area	±10 parking spaces	190	±8 cars / 6 cars + 8 motorbikes

Based on the analysis of site conditions and facts obtained from observations, and by considering various factors that support the quality of the hospital environment, the landscape design for the hospital garden area will be planned with the Healing Garden concept through

a Green Architecture approach. This concept was chosen because green open spaces have a very important role in supporting the physical and mental healing process of patients, while also creating an environment that supports the well-being of visitors and hospital staff. The Healing Garden is designed as a space that can stimulate peace of mind and reduce stress levels, which indirectly accelerates patient recovery.

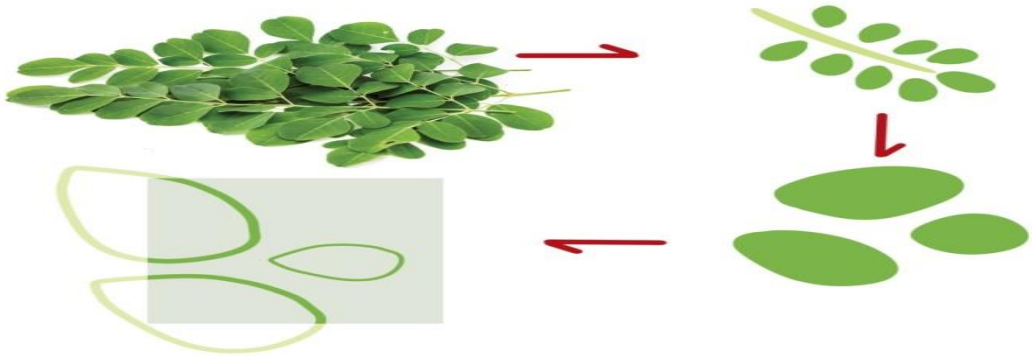


Figure 1. Design Concept

The green architecture approach applied in this garden's design focuses not only on selecting environmentally friendly plants and materials, but also on creating an ecosystem that supports the long-term health of its users. By utilizing natural elements such as local vegetation that filters the air, water elements that create a calming atmosphere, and good air circulation, this garden aims to improve air quality, reduce noise pollution, and provide comfortable shade. The use of environmentally friendly building materials and the implementation of rainwater absorption technology also represent a commitment to environmental sustainability.

In addition to providing physical and psychological benefits for patients, this garden design also supports the government's efforts to provide green open spaces that meet standards of comfort and quality of life. This Healing Garden is expected to provide a place for the public to find tranquility, rest, and interact with nature within the hospital environment, thus becoming an effective solution for improving quality of life and physical and mental health.

By embracing the principles of green architecture, the hospital's healing garden not only provides a pleasant space but also contributes to the creation of a healthy and environmentally friendly ecosystem. In this case, garden design is a synergistic effort that benefits not only patients in recovery but also all visitors and staff at the hospital, while also supporting the achievement of sustainable development goals aligned with future needs.

Site analysis indicates that the planned location for the Healing Garden has various potentials that support the success of the therapeutic landscape design. Geographically, the site is strategically located behind OG Hospital Binjai, with direct access from the main road, relatively flat land contours, and a tropical climate that supports year-round green vegetation.

The surrounding environment features natural vegetation such as rain trees and mahogany trees, as well as fertile alluvial soil that optimally absorbs water. This is one of the advantages in creating a garden with efficient long-term maintenance costs. However, limited night lighting and the lack of modern drainage infrastructure are important considerations for future technical design.

2. Design Concept and Integration of Green Architecture

The main concept of this healing garden design is inspired by the shape of the moringa leaf, known as a symbol of health and sustainability. The moringa shape is implemented in the spatial zoning, such as circulation paths, meditation points, and planting patterns. This concept was chosen because it reflects harmony with the values of green architecture, which prioritize energy efficiency, the use of local vegetation, and the principles of sustainability.

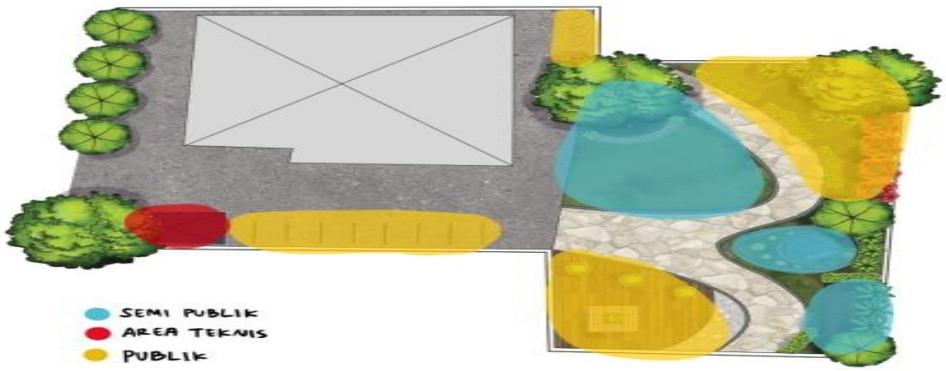
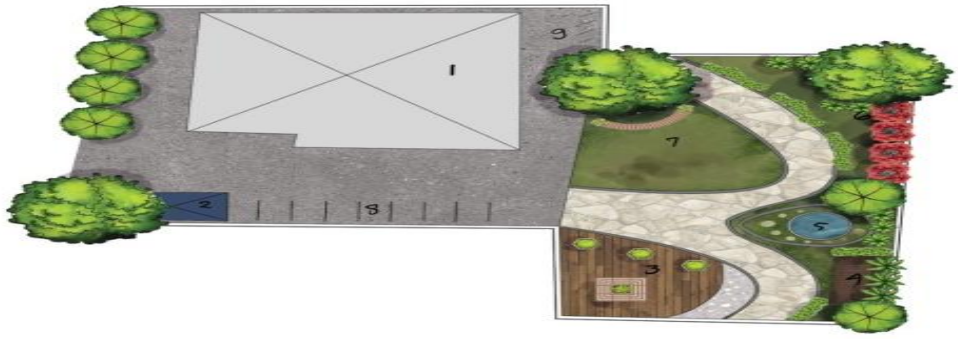


Figure 2. Zoning concept



Gambar 3. Konsep tata letak ruang

The Healing Garden is designed with three main zones: a public area open to all visitors, a semi-public area designated for patients and their families, and a technical area accessible only to park management staff. Each zone has a therapeutic function strategically designed based on analysis of sun exposure, wind direction, and noise levels.

3. Therapeutic and Psychological Benefits

The green architecture approach applied in the garden's design focuses not only on selecting environmentally friendly plants and materials, but also on creating an ecosystem that supports the long-term health of its users. By utilizing natural elements such as local vegetation that filters the air, water elements that create a calming atmosphere, and good air circulation, the garden aims to improve air quality, reduce noise pollution, and provide comfortable shade. The use of environmentally friendly building materials and the implementation of rainwater absorption technology also represent a commitment to environmental sustainability.

In addition to providing physical and psychological benefits for patients, the garden's design also supports the government's efforts to provide green open spaces that meet standards for comfort and quality of life. This Healing Garden is expected to provide a place for the public to find tranquility, rest, and interact with nature within the hospital environment. This can be an effective solution for improving quality of life and physical and mental health.

Supporting the principles of green architecture, the hospital's healing garden not only provides a pleasant space but also contributes to the creation of a healthy and environmentally friendly ecosystem. In this regard, the garden design is a synergistic effort that benefits not only patients in recovery but also all visitors and hospital staff, while also supporting the achievement of sustainable development goals aligned with future needs.

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nighttime lighting and the lack of modern drainage infrastructure are important considerations for future technical design.

The Healing Garden significantly contributes to patients' psychological and physiological recovery. Natural elements such as the sound of water, the aroma of herbal plants, and natural lighting have been scientifically proven to reduce stress levels, accelerate post-operative wound healing, and improve sleep quality. The garden also serves as a place for positive social interaction, a reflection space for visitors, and a rest area for medical personnel who often experience high work pressure. Thus, the Healing Garden at OG Hospital Binjai is not only an aesthetic element but also a supportive infrastructure for holistic health.

4. Evaluation of Space Requirements and Efficiency

Based on the space requirements analysis, several key elements of the park include pedestrian paths, seating areas, reflection spots, water zones, and supporting facilities such as restrooms and parking areas. The spatial design is tailored to an area of approximately 3,000 m2 and considers an optimal capacity of approximately 80 people at a time. The park utilizes green architecture principles through the use of local materials, a natural drainage system, and solar-powered lighting. This demonstrates that the design is not only functionally effective but also cost-efficient in terms of maintenance.

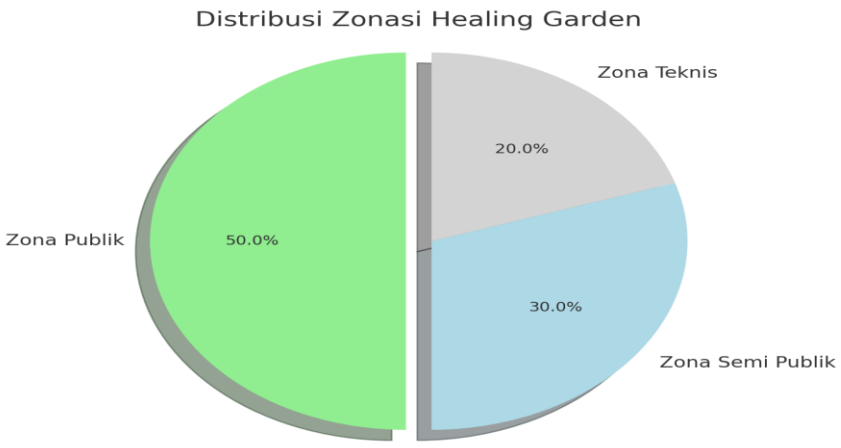

Figure 1. Distribution of Healing Garden Zoning

V. CONCLUSION

This study concludes that the design of the Healing Garden with a Green Architecture approach at OG Hospital Binjai is a strategic solution to support the patient's overall healing

process, both physically and psychologically. By integrating natural elements such as green vegetation, natural lighting, good air circulation, as well as water elements and user-friendly pedestrian paths, this garden not only functions as an aesthetic space, but also as a therapeutic space that effectively reduces stress, anxiety, and accelerates patient recovery. The Green Architecture approach in this design has been proven to support environmental sustainability, energy efficiency, and create a comfortable and environmentally friendly atmosphere for patients, staff, and hospital visitors. The design inspired by the shape of the Moringa leaf not only represents a symbol of health and life, but also strengthens local identity and ecological awareness. Therefore, this Healing Garden is expected to become a model for the development of green open spaces in hospital environments that are oriented towards mental health, sustainability, and the quality of human life holistically.

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