

## BIOPHILIC DESIGN-BASED COMMUNITY MENTAL HEALTH SERVICE CENTER IN MEDAN CITY

Muhammad Nuzil Qirani Al Hasyen <sup>1</sup>, Dwira Nirfalini Aulia <sup>2</sup>

Department of Architecture, Faculty of Engineering, Universitas Sumatera Utara

\*Corresponding Author : [nuzil09840@gmail.com](mailto:nuzil09840@gmail.com)

### Abstract (English)

*Focusing on actively involving the potential of the community creates a new paradigm in community mental health, encompassing the management of mental health issues through promotive, preventive, curative, and rehabilitative aspects. This concept serves as a foundation for an integrated mental health service center, given that mental health service facilities in Indonesia, particularly in Medan, remain limited and suboptimal. The biophilic design concept offers an approach that enhances the environmental quality of healthcare facilities by integrating natural elements to support the holistic healing process of patients. Thus, biophilic design can serve as an innovative solution for developing more holistic and sustainable mental health facilities, especially in Medan. This study is expected to serve as a reference for the design of other mental health facilities in Indonesia.*

### Article History

Submitted: 21 Maret 2025

Accepted: 24 Maret 2025

Published: 25 Maret 2025

### Key Words

Community Mental Health,  
Biophilic Design, Medan City

### Introduction

Humans are unique creations of God, with uniqueness in intellectual, social, physical, and spiritual aspects. Humans have responsibilities towards themselves, others, nature, and God. Humans themselves consist of body, soul, and spirit, each of which plays an important role in life [1]. The balance between these three dimensions is important to achieve harmony and happiness in our lives. This is in line with the WHO perspective, namely 'a healthy soul can be known from a person's physical and social condition, while a healthy physical and social are determined by a healthy soul'. Therefore, mental health is the main problem of comprehensive health issues. [2]

Mental health issues have gained significant attention due to their widespread impact on individuals, families, and society. In today's complex and stressful world, maintaining psychological well-being is essential. A deeper understanding of mental health is crucial to effectively navigate life's challenges and promote overall balance [3].

North Sumatra is in fourth place with the number of mental disorder cases of 36,146 in the population aged 15 years and over, after Central Java, East Java, and West Java [6]. North Sumatra has a close relationship with urban development, especially in the context of Medan as the provincial capital. Living in an urban environment has been identified as a risk factor for mental disorders. Although infrastructure, socio-economic conditions, nutrition, and health services in cities are better than in rural areas, this risk remains. Higher stress exposure and higher stress vulnerability appear to play an important role in the increase in mental disorders in urban areas [5]. Reported from patient visit data at the Prof. DR M Ildrem Mental Hospital, patients who visit come from all over North Sumatra with Medan City residents accounting for 30% more, followed by residents of Deli Serdang, Langkat, Siantar and other areas of North Sumatra [7]. Thus, the existence of mental health centers plays an important role in increasing public awareness and understanding of mental health. This education helps reduce the stigma that is often associated with mental disorders and encourages individuals to seek help without shame or fear. Considering the limited number of mental health services spread across Medan City.

Biophilic design offers a solution to the growing mental health issues in urban areas by reconnecting people with nature. As modern city life isolates individuals from natural

environments, integrating biophilic elements into spaces, especially mental health centers, can enhance well-being, support mental health, and improve cognitive function. Research highlights its positive impact, making it a valuable approach for creating healthier urban living environments [8].

So therefore, this is a consideration for urban communities, with the concept of a mental health service center that is easily accessible and designed with a biophilic design that can help improve mental well-being. In addition, this service center can help increase public awareness of the importance of mental health and reduce the stigma that is still often attached to mental health problems.

### Method

By utilizing Analysis and Synthesis Methods as well as Precedent Comparison in the application of spatial planning and biophilic design principles in buildings, this design demonstrates that the integration of natural elements—such as natural lighting, proper ventilation, green open spaces, and eco-friendly materials—can create a more comfortable environment, reduce stress, and accelerate patient recovery.

### Result and Discussion

Biophilia theory states that humans naturally tend to respond positively to nature, which helps reduce stress and enhance well-being. Integrating nature into healthcare spaces can enhance patient recovery, while potentially threatening natural features should be avoided to maintain a calm environment. The following is a discussion of the application of studies based on biophilic design principles with a service approach in the form of promotive & preventive, curative and rehabilitative.

#### 1.1 Site Location

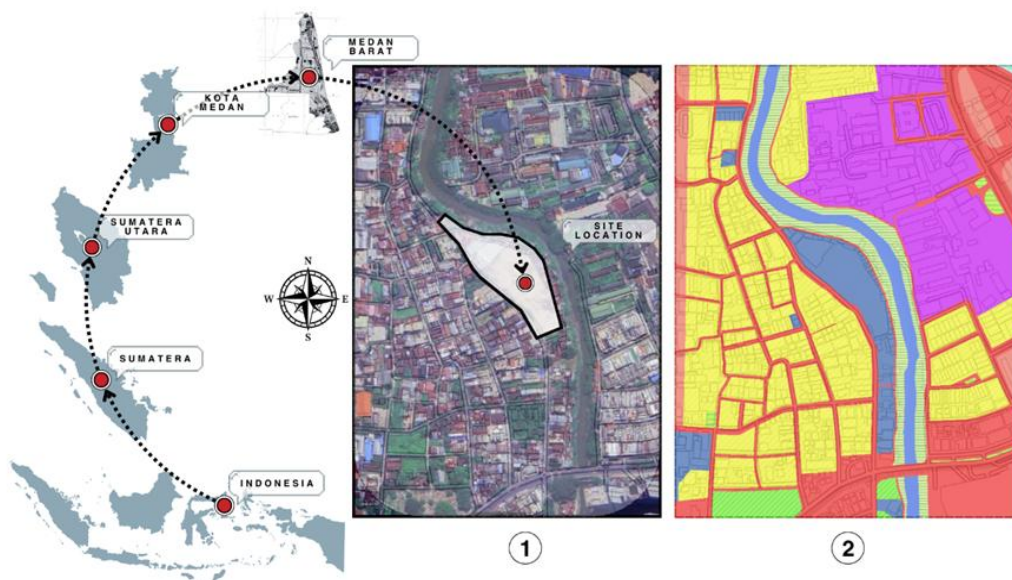


figure 1 Site Location and Regulation

source : GoogleEarth & RDTR

1. The location is on Jl. Sei Deli, Silalas, Medan Barat District, Medan City, North Sumatra with an area of 19,000 m<sup>2</sup>.

2. Based on regulations originating from the Detailed Spatial Plan, the site has a blue notation which means it is suitable to be used as a Public Service Facility area, this is in accordance with land planning for Health Services which are typical of Public Service Facilities.

### 1.2 Mass Composition

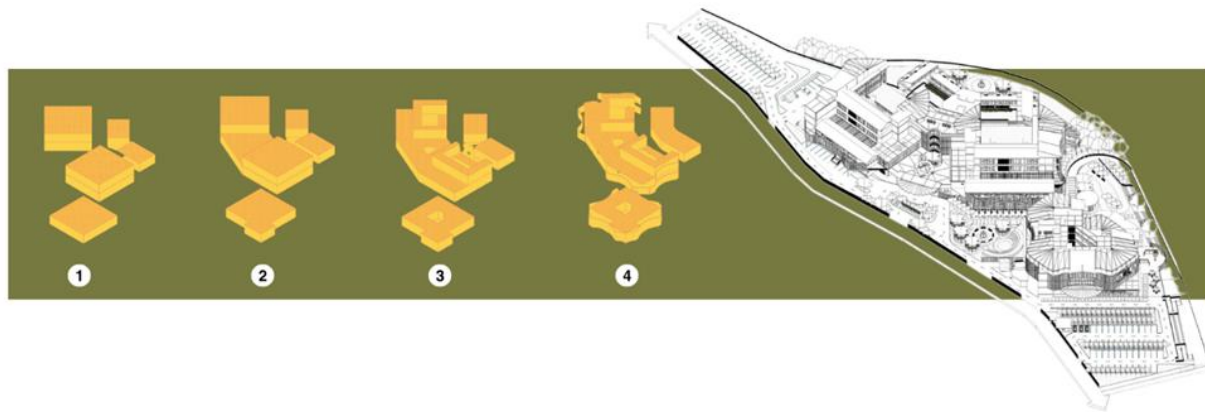


figure 2 **Mass Composition**  
source : **Author Documentary**

The form of the mass composition resembles a four-leaf clover. By adopting a natural shape, the mass composition can be considered biomorphic, aligning with one of the biophilic principles, namely 'Biomorphic Forms & Patterns.' The transformation of the composition is explained as follows:

1. Taken from the basic cube shape spread across the site. Then the building mass is arranged according to the site analysis that has been analyzed.
2. Adjustment of the building mass is done by adding prism and block-shaped elements to suit the needs of the space, while creating a dynamic and harmonious composition architecturally.
3. The reduction in building mass is clearly visible in the middle area, intended to create an inner courtyard garden. Likewise, the upper mass is reduced so that the building does not appear too massive while maintaining a balanced proportion. Design elements such as facade articulation are applied so that the building structure feels lighter and not too much like a wall.
4. The addition of secondary skin in certain areas with a wavy shape, gives a biomorphic impression in the form of a clover leaf to the building. So when viewed on the building plan, the shape is like a clover leaf.

### 1.3 Space Program

After obtaining a mass composition with reference to health services based on 'Community Mental Health Services' which is a new paradigm in mental health that includes handling mental health problems through promotive, preventive, curative, and rehabilitative aspects [9]. Thus, three mass compositions were obtained according to the needs of building users. Each building has promotive & preventive functions, curative functions and rehabilitative functions.



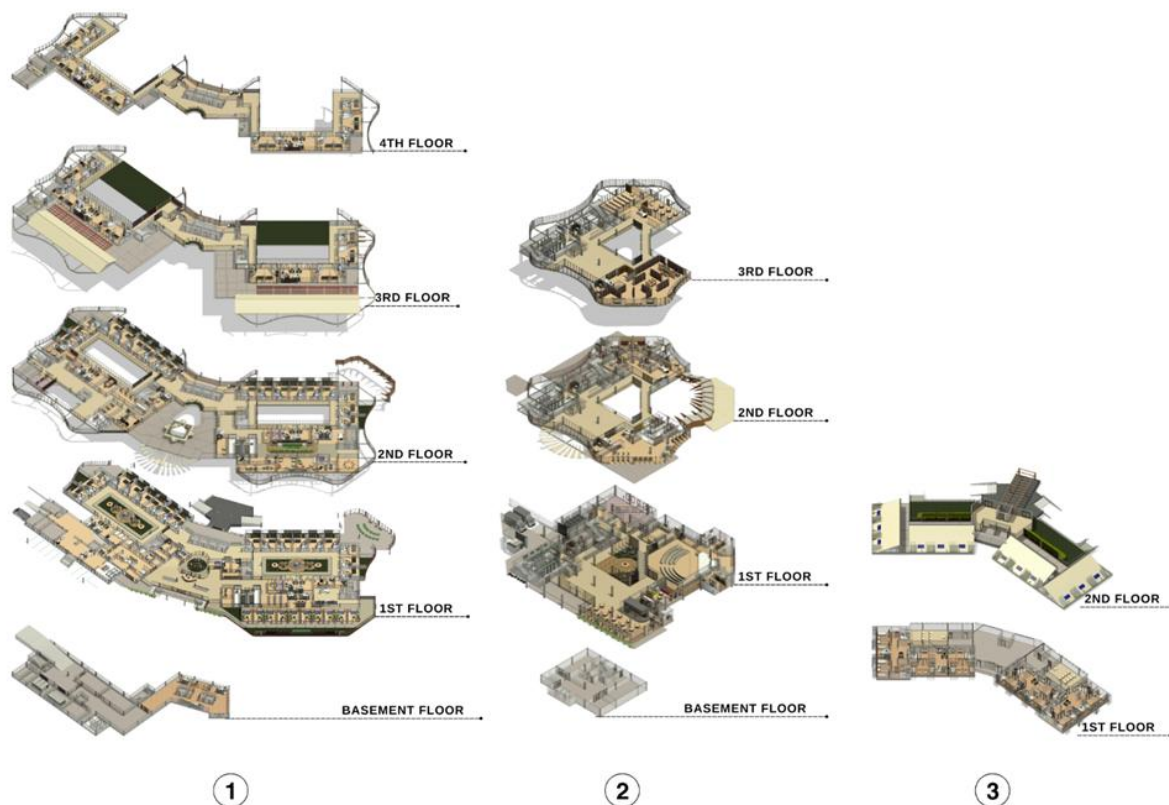


figure 3 **Space Program of Building**  
source : **Author Documentary**

#### 1. Curative Building

Curative in mental health facilities focuses on healing disorders, improving psychological well-being, and supporting individuals' recovery to live optimally. The Curative Building space program is as follows:

##### a. Basement Floor

This floor contains mechanical rooms and service areas, including the kitchen, patient laundry room, and nutritionist's room.

##### b. 1st Floor

This floor features the main lobby as the primary entrance to the building. It includes the Emergency Department and the Management Lounge. A Sally Port Room is provided as a secure transition area to control the entry and exit of patients and visitors. Additionally, there is a 1-Bed Patient Room along with a Patient Communal Room, located near the Nurse Station. Outpatient facilities include a Psychiatrist and Psychologist Counseling Room.

##### c. 2nd Floor

This floor consists of 1-Bed Patient Rooms with adjacent Patient Communal Rooms, located near the Nurse Station. There is also a Therapy Area for inpatient and outpatient treatment. Additionally, a Management Area is available on this floor.

##### d. 3rd Floor and 4th Floor

The third and fourth floors contain 2-Bed Patient Rooms along with Patient Communal Rooms, which are also situated near the Nurse Station as part of the patient monitoring facilities.

## 2. Promotive & Preventive Building

In the context of mental health facilities, promotive and preventive approaches focus on mental health prevention and enhancement within the community. Mental health facilities that integrate promotive and preventive aspects play a crucial role in fostering a mentally healthier society. The Promotive & Preventive Building space program is as follows:

### a. Basement Floor

This floor is dedicated to the building's Mechanical Room.

### b. 1st Floor

On this floor there is an Innercourt garden after entering the main lobby, the facilities on the first floor are prioritized for outpatients with Daycare facilities as childcare facilities, Healthy Restaurant as dining facilities, and Multifunction Hall as a meeting room for the mental health community.

### c. 2nd Floor

This floor is dedicated to body relaxation, such as the Fitness Area and SPA and Sauna Area.

### d. 3rd Floor

On this floor there is a Library Area and a Workshop Area as a medium for reading and exploration for building users.

## 3. Rehabilitative Building

Rehabilitative in mental health facilities aims to restore the social, emotional and independence functions of individuals with mental disorders, as well as improve their overall quality of life. The Rehabilitative Building space program is as follows:

### a. 1st Floor

The first floor is used as a Mechanical Room and Waiting Room, and there is a Gardening Area for patients to do outdoor activities.

### b. 2nd Floor

The second floor is specifically for patient accommodation areas by differentiating women and men in their units which are equipped with a Nurse Station and Workshop Room.

## 1.4 Biophilic Implementation

figure 4 **Biophilic Implementation**source : **Author Documentary**

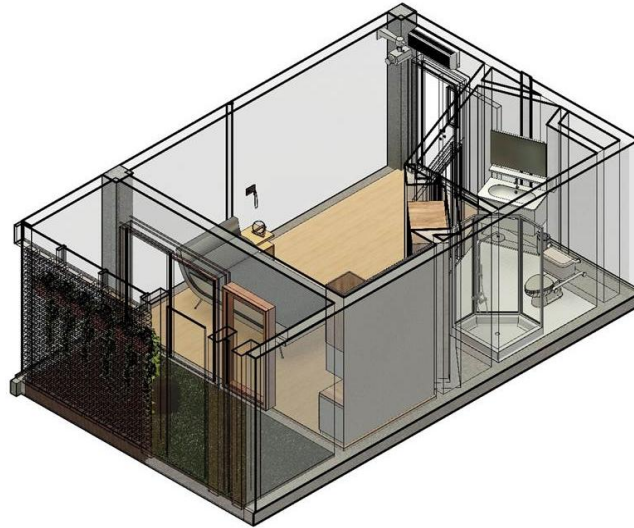
With biophilic design guidelines in the building approach, it produces a design pattern in space in terms of natural analogies and nature in space. So that the following design approaches are obtained :

1. **Biomorphic Forms & Patterns** :The building is biomorphic, representing the shape of a clover leaf by considering the pattern of air circulation and natural lighting inside the building.
2. **Complexity & Order** : The use of natural materials such as textured wood gives the impression of natural complexity to the room's furnishings.
3. **Material Connection with Nature** : The dominant use of wood materials gives the impression of a connection with nature to the building and its surrounding areas.
4. **Visual Connection with Nature** : The main lobby is designed with an innercourt garden giving a natural visual impression when entering the entrance.
5. **Non-Visual Connection with Nature** : The use of herbal vegetation indoors provides a therapeutic olfactory sensation for building users.
6. **Non-Rhythmic : Sensory Stimulation** : The wall fountain provides the sound of trickling water as a form of sensory stimulation.
7. **Dynamic and diffuse light** : The use of wide openings and skylights in the building optimizes sunlight as natural lighting.
8. **Presence of water** : The use of fountains provides air exchange for building users.
9. **Thermal & Airflow Variability** : The use of jalousie on the side of the building provides natural thermal comfort.
10. **Connection with Natural System** : Provides a connection to the surrounding area by processing the existing natural landscape.



## 1.5 Room Analysis

## 1.5.1 Patient Bedroom Design Concept

figure 5 **Patient Bedroom Design Concept**source : **Author Documentary**

When viewed in the context of the floor plan, the floor plan is designed without sharp corners that could potentially endanger patients. In the back area of the room, a private garden is provided for patients. Gardening or simply enjoying the garden can be part of holistic therapy, providing positive sensory stimulation such as the sounds of nature and the scent of plants.

In terms of facilities, the room is equipped with curved wards designed to provide a sense of security for patients, while strong and sturdy built-in furniture minimizes the risk of injury. CCTV facilities are provided to monitor patient activities, ensuring their well-being. In addition, air conditioning positioned above the door ensures smoother and more even air flow throughout the room. The use of Hand Railing is also effective for patients with disabilities, offering easy access to the toilet. As well as the selection of smooth and comfortable vinyl flooring can reduce stress, anxiety, and the risk of injury due to its high coefficient of friction.

## 1.5.2 Counseling Room Design Concept

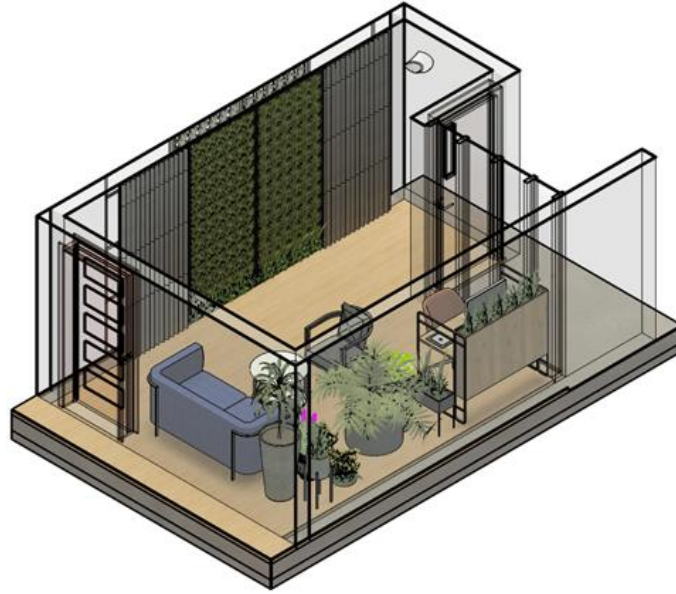


figure 6 **Counseling Room Design Concept**  
source : **Author Documentary**

In the context of facilities in the counseling room, the following are considered; Each consultation room is equipped with a computer network, which allows telehealth services for online clients. The selection of furniture in the form of large and luxurious sofas is included in the design to create a relaxed and informal atmosphere, which helps clients feel more comfortable expressing themselves. In addition, the presence of plants has been shown to reduce stress and anxiety, which further increases the sense of comfort. To ensure privacy, separate entry and exit points are provided for clients.

## 1.6 Outdoor Space

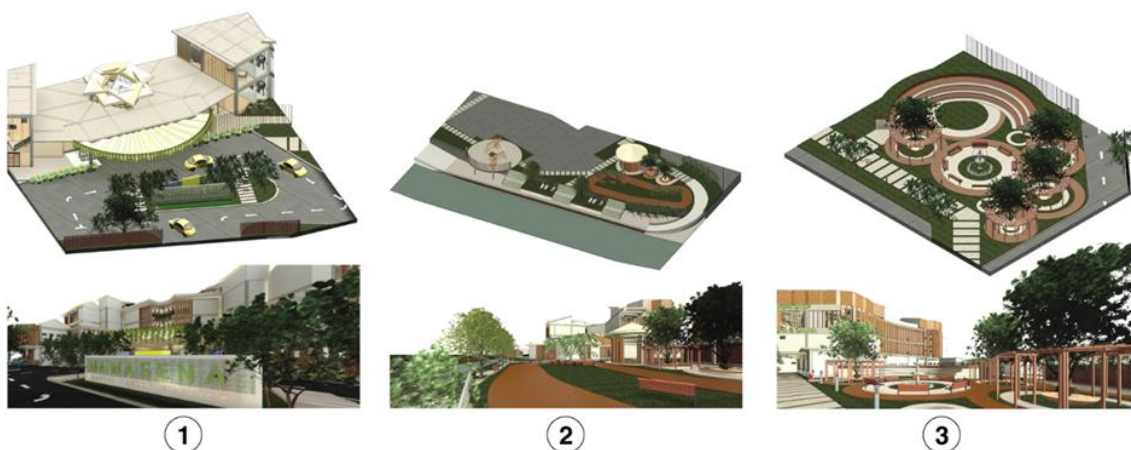


figure 7 **Outdoor Space Design Concept**  
source : **Author Documentary**



The layout of the outdoor space concept is as follows:

1. Entrance Design Concept  
The entrance to the main lobby is marked by surrounding vegetation, serving as a pathway guide. Adopting the "Hidden Place" concept, partition walls are incorporated into the entrance design to enhance privacy for building users. As visitors step inside, they are welcomed by a pond, which not only adds to the aesthetic appeal but also helps cool the surrounding air through natural water evaporation.
2. River Park Design Concept  
The children's play area is situated at the back of the building, near the Healthy Restaurant. Adjacent to it, the communal area, furnished with lounge chairs, offers a serene view of the river and sky, enhancing the relaxing ambiance. To encourage physical fitness, a jogging track is provided, promoting better blood circulation to the brain, which aids in improving cognitive function and memory. Additionally, a dedicated pavilion is available for yoga activities, where movement and deep breathing stimulate the production of endorphins and serotonin, contributing to an improved mood.
3. Amphitheater & Park Design Concept  
The pedestrian pathway functions as a circulation route, linking the Promotive & Preventive Building with the Curative Building. Adjacent to it, the amphitheater serves as an outdoor communal space, offering a gathering area for building users. Nearby, the seating area features wooden benches facing the fountain, enhancing the visitor experience through sensory stimulation.

## Conclusion

The conclusion of this paper emphasizes that the application of biophilic design in community mental health center services in Medan can be an innovative solution to improve the quality of the health facility environment. With a promotive, preventive, curative, and rehabilitative approach, this design not only supports a holistic healing process but also improves the limitations of mental health services that are still less than optimal in Medan. This study is expected to be a reference for the development of more sustainable and integrated mental health facilities in Indonesia.

## Acknowledgements

The author would like to thank all parties who have contributed to the completion of this journal. Especially the Department of Architecture, Faculty of Engineering, University of North Sumatra

## References

- [1] A. T. Banamtuan and A. L. Moimau, "Kedalaman Jiwa: Perspektif Alkitab Tentang Hakekat Manusia," *\*J. Budi Pekerti Agama Kristen dan Katolik\**, vol. 2, no. 2, Jun. 2024. [Online]. Available: <https://journal.aripafi.or.id/index.php/jbpakk/article/view/315/408>(<https://journal.aripafi.or.id/index.php/jbpakk/article/view/315/408>). Accessed: Apr. 23, 2024.
- [2] H. M. B. Ghazali, *\*Kesehatan Mental: Membangun Hidup Lebih Bermakna\**. Samudra Biru, 2024.
- [3] D. Wulandari and R. Elviany, "Dampak Kesehatan Mental dan Lonjakan Kasus Bunuh Diri di Era Modern," *\*Liberosis: J. Psikol. dan Bimbingan Konseling\**, vol. 2, no. 1, pp. 51–60, 2024.
- [4] I. M. Aditiya, "Fenomena Kasus Bunuh Diri di Indonesia," *\*GoodStats\**, Oct. 17, 2023. [Online]. Available: <https://goodstats.id/infographic/fenomena-kasus-bunuh-diri-di>

- indonesia-LiNQq](<https://goodstats.id/infographic/fenomena-kasus-bunuh-diri-di-indonesia-LiNQq>).
- [5] M. Adli, "Urban stress and mental health," \*LSE Cities\*, pp. 1–3, 2011.
- [6] I. Widyastuti, "Sumut Empat Besar Kasus Gangguan Jiwa (Kesehatan)," May 20, 2023. [Online]. Available: [<https://www.rri.co.id/medan/kesehatan/241032/sumut-empat-besar-kasus-gangguan-jiwa>](<https://www.rri.co.id/medan/kesehatan/241032/sumut-empat-besar-kasus-gangguan-jiwa>).
- [7] RSJ Prof. Ildrem, "Jumlah Pasien Rawat Jalan RSJ Prof DR M Ildrem Meningkat," May 20, 2019. [Online]. Available: [<http://rsj.sumutprov.go.id/rsj/news-Jumlah-Pasien-Rawat-Jalan-RSJ-Prof-DR-M-Ildrem-Meningkat.html>](<http://rsj.sumutprov.go.id/rsj/news-Jumlah-Pasien-Rawat-Jalan-RSJ-Prof-DR-M-Ildrem-Meningkat.html>).
- [8] F. N. Irbah and A. Kusumowidagdo, "Penerapan Biophilic Design untuk meningkatkan kesehatan mental penduduk kota," in \*Seminar Nasional Envisi\*, 2020.
- [9] Keputusan Menteri Kesehatan Republik Indonesia Nomor 406/Menkes/SKNI/2009 Tentang Pedoman Pelayanan Kesehatan Jiwa Komunitas