

MENTAL REHABILITATION CENTER

Shayma Bakhamis¹, Mohammad Fekry²

^{1,2}College of Architecture and Design, Effat University, Qasr Khuzam St, Kilo. 2, Old Mecca Road. P.O.BOX 34689, Jeddah 21478, Saudi Arabia
Email: sbakhamis@effatuniversity.edu.sa, mfekry@effatuniversity.edu.sa

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Abstract

Physical and natural environment features can encourage the recovery and rehabilitation of patient in health care organizations. Thus, it is vital for rehabilitation center to incorporate a pleasant and natural surrounding for the patients to recover and heal. Hence, this work presents a proposal on developing a mental rehabilitation center at Jeddah, Saudi Arabia. For this work, five case studies were analysed and the total net area of 21000 m² is estimated for the center. The rehabilitation center is comprised of administration area, medical unit, staff office and amenities, accommodation area, sports and entertainment zone, educational area and atrium courtyards. Furthermore, 3 sites were proposed as the area of development. Based on site evaluation score, site 1 which is located at Obhor North side of Jeddah City was selected as the construction site. The proposed mental rehabilitation center is designed based on green healing spaces. Furthermore, the layout of the mental rehabilitation center is designed with elements of comfort, privacy, interaction and incorporation of natural healing environment.

Keywords-- rehabilitation, center, architecture, design, Saudi Arabia

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INTRODUCTION

Every individual can experience mental illness, where its intensity and duration varies from person to person. Some of them may need medical support for a long time ; others may need only occasional support to preserve their productivity [1].

Mental rehabilitation center promote recovery from mental illness to enable people to regain their emotional, social and physical skills without interfering with their symptoms [2]. Thus, construction of rehabilitation conditions with the aim of enhancing medical outcomes, decreasing the anxiety of staff and patients, eliminating medical errors, improving patient fulfillment are considered to be crucial goals in the development of rehabilitation centers in the coming years [3].

During the day, participants in a rehabilitation program have a range of compulsory operations that may be physically and emotionally challenging. Consequently, even though in a way the rehabilitation program is intended to be therapeutic, it can often be experienced as stressful by participants. Therefore, exposure to a natural view of the environment can advocate recuperation of stress on such situations [4].

Scientific study have shown that exposure to nature and daylight can alleviate pain and depression, with virtual views of nature leading to a short period of stress recovery while staying in low noise and a good sleep environment [5].

Furthermore, there is a huge role in having gardens and parks in a hospital atmosphere. The green creates a relaxed, refreshing atmosphere for patient-visitor interaction away from the hospital interior [6]. Accessible gardens (natural landscape) can improve the ability of people to cope with stress and thus potentially improve health outcomes as nature has positive health effects [7]. On the other hand, to ease them for recovery, patients need a good quality housing, safe and comfortable environment [8,9].

Thus, in this work, a proposal on the development of mental rehabilitation center at Jeddah, Saudi Arabia is presented. This development is proposed to provide a healing environment

where architecture and nature merge to create a safe and comfortable environment for patients to be rehabilitated and recovered.

CASE STUDIES

In this work, five case studies were analysed. The case studies selected are:

- Parkwood Institute Mental Health Care Building
- VA Palo Alto Health Care System
- Worcester Recovery Center
- The Center De Psychiatrie du Nord Vaudois (CPNVD)
- Ellsinore Psychiatric Clinic

Parkwood Institute Mental Health Care Building

Parkwood Institute Mental Health Care Building is located at London, United Kingdom (Figure 1). This building was designed by Parkin Architects Limited. The area of this location consists of 41 806 m². The capacity of in patient bed is 156. In addition, the healing and therapeutic space area is comprised of 42 789 m².

Parkwood Mental Health Care is an institute for adolescents and adults suffering from mental illness, providing them with care, recovery and rehabilitation, encouraging individual growth and skill development. The site is located far from the city centre, adjacent to other health facilities. It is surrounded by natural elements such as the lake and plenty of greenery. This structure has four access point, which are main entrance, secure entrance, staff entrance and loading dock entry.

On the other hand, three courtyards are placed in the building, introducing natural settings into the heart of the building, providing a healing environment that supports patients during their recovery periods. Built on (LEED) standards, the building was designed to support and enhance the rehabilitation journey of patients and a place where privacy and dignity are highly valued. The facility balances the privacy, security, safety, and healing spaces of the patient. The layout of the building inspires patients to interact with each other, increasing social aspects.



Figure 1. Parkwood Institute Mental Health Care Building

VA Palo Alto Health Care System

VA Palo Alto Health Care System (VAPAHCS) is located at California, USA (Figure 2). It was designed by LLP architecture. The total area of this structure and location is 8,454.17 m². It has in-patients bed capacity of 80. VAPAHCS is a teaching hospital that provides a full range of patient care services with state-of-the-art technology as well as education and research. This new mental health center focuses on recovery, engagement and patient safety by integrating landscaped gardens, recreation, social spaces and natural daylight. This design connects patients with nature while indoors is surrounded by art, natural lighting, and outdoor views. The large recreation courtyard contains a variety of therapeutic spaces that meet the physical, social and spiritual needs of patients. It includes a basketball court, a small par course, raised planters for horticultural therapy activities and paved walking paths. A courtyard shared by two patient units offering basketball, fitness, and gardening activities to keep patients active. The interior of the rotunda in the new Mental Health Center serves as the entrance point to the entire building.



Figure 2. VA Palo Alto Health Care System

Worcester Recovery Center

Worcester Recovery Center is located at Massachusetts, USA (Figure 3). It was designed by architect Ellenzweig. It has an area of 8500 m². It has in-patients bed capacity of 320 beds. Worcester Recovery Center is a mental and physical health care center for adults and adolescents. This hospital's design is a village and it promotes recovery and offers all the functions for everyday life. The site location is surrounded residential and greenery area. The design of the building is unique which allows patients merge gradually from the small public spaces in the "House" to the shared therapeutic spaces "Neighborhood" reaching finally to the shared activities by the entire hospital including café, gym, stores and library. Furthermore, this structure has a courtyard which has wide open spaces with walkways and pavilion so patients can interact and enjoy with their family and friends.



Figure 3. Worcester Recovery Center

The Center De Psychiatrie du Nord Vaudois (CPNVD)

The Center De Psychiatrie du Nord Vaudois (CPNVD) is located at Yverdon, Switzerland (Figure 4). It has an area of 7200 m². It has in-patient bed capacity of 56 beds. This center is dedicated to adult psychiatry and geriatric psychiatry. The exterior of the building is protective, the presence of the building communicates to the public, allowing patients to reduce stigma and prejudice. The reception is clearly visible in the main entrance, furnished with many sofas so that visitors and patients can interact. In the main entrance there is a wall that separates the public areas from the internal ones. This building's design is an H shape that includes three floors connected by a central administration block. The ground floor consists of 2 internal and public areas. The public area includes a foyer, restaurant and conference room, while the indoor area includes therapy rooms. The first floor consists of numerous offices (psychiatrists, psychologists, social workers, and administration). The rooms of the patient are located in the second and third floors, as well as the examination rooms and some staff spaces. Patient rooms are divided into four units, each unit has its own living room shared by the patients in the same unit, allowing the atmosphere to be like their family home.



Figure 4. Worcester Recovery Center

Ellsinore Psychiatric Clinic

Ellsinore Psychiatric Clinic is located at Helsingør, Denmark (Figure 5). This structure has an area of 41806 m². It has in-patient bed capacity of 48 beds. This clinic is located far from the city center and it is surrounded by nature. The snowflake structure of this psychiatric clinic gives a central node, surrounded by the departments radiantly separately that make the hospital fold into the surrounding landscape to optimize mental illness cure. In addition, a safe, pleasant environment close to nature can have a positive effect on psychiatric patients. On the ground floor there are two sets of rooms facing the lake and one set of rooms facing the surrounding hills.

**Figure 5.** Ellsinore Psychiatric Clinic**PROGRAM ASSUMPTION AND SPACE DETAILS**

Based on Table 1, for the proposed mental rehabilitation center, the total net area is 21000 m². The net area is comprised of administration area, medical unit, staff office and amenities, accommodation area, sports and entertainment zone, educational area and atrium courtyards. Thus, the estimated gross floor area is 29000m²

Table 1. Build area estimation

Space	Total Area (m ²)
Administration	410
Medical Unit	3600
Staff office and amenities	1235
Accommodation area	8300
Sports and entertainment area	2985
Educational area	2970
Atrium courtyards	1500
Total net area	21000

PROPOSED SITE**Proposed site: Site 1**

For Site 1 (Figure 6), the site is located at Obhor North side of Jeddah City. It has sea view on both sides. It is accessible from Obhor and King Saud road. It has a total area of 70400 m²

Proposed site: Site 2

For Site 2 (Figure 7), this site is also located at Obhor North side of Jeddah City. It has sea view on one side. It is accessible from Obhor road. It has a total area of 42500 m².

Proposed site: Site 3

For Site 3 (Figure 8), this site is located at north of Cornish road of Jeddah. It has sea view on one side. It is accessible from Cornish road. It has a total area of 80000 m².

**Figure 6.** Site 1**Figure 7.** Site 2**Figure 8.** Site 3**SITE EVALUATION AND ANALYSIS**

Site evaluation was performed on all three proposed sites. Site evaluation was done in terms of accessibility, existing natural elements, acoustic control, views, privacy, security, medical facilities, environmental quality and adaptability. The sites were evaluated using weighting factors (WF), where 1 = not very important, 2 = slightly more important, and 3 = important. Based on Table 2, site 1 has exhibited the highest site evaluation score of 62, compared to site 2 with site evaluation score of 56, and site 3 with score of 41.

Table 2. Site evaluation

Criteria	WF	Site 1	Site 2	Site 3
Accessibility	2	4	6	6
Existing natural elements	4	16	16	12
Acoustic control	2	6	4	2
Views	2	8	6	4
Privacy	3	12	6	3
Security	2	6	6	4
Medical facilities	1	2	4	4
Environmental quality and adaptability	2	8	8	6
Total		62	56	41

Site 1 is considered the preferred site to locate the mental rehabilitation center based on site evaluation score. The site has excellent views (next to the sea and resort area). The site can be accessed from two roads (Obhor and King Saud road). The site has a high level of security and privacy. The location is very calm and peaceful. No high-rise building around it, fresh air can be easily accessed. Opportunity for good landscaping and outdoor activities. Future expansion can take place due to the vacant

lands next to the site. The site has good climate as it has exposure to sun through out the year, with wind breeze.

PROJECT DESIGN

Figure 9 shows the proposed design of the mental rehabilitation center. The design concept is inspired from green healing spaces which has proven that the psychological aspects of a patient's environment can reduce stress, speed up recovery and rehabilitation. In addition, the layout is designed with the following elements of comfort, privacy, interaction and most importantly, healing spaces. The building is layered in 3 distinct elements, which are, the downtown, the neighbourhood and the house, which will enable patients gradual recovery and possible movements. Figure 10 shows the perspective courtyard. Figure 11 shows the accommodation and medical area.



Figure 9. Overview of the proposed mental rehabilitation center



Figure 10. Perspective courtyard.



Figure 11. Accommodation and medical

CONCLUSION

This work has proposed the development of mental rehabilitation center at Jeddah, Saudi Arabia. It will be located at Obhor North side of Jeddah City. This rehabilitation center will have an estimated gross floor area of 29000 m² and a total net area of 21000 m². This rehabilitation center was designed for patient rehabilitation with healing aspects, treatment and nature environment exposure. It will serve the Jeddah community with good medical treatment and natural healing environment.

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