

# Application of Therapeutic Design Strategies for Optimal Healing in Proposed Drug Rehabilitation Center, Kano

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**Abstract-** Drug addiction remains a pressing global health challenge, with serious implications for public health, social stability, and economic development. In Nigeria, and particularly in Kano State, the rising prevalence of substance abuse such as tramadol, codeine, and cannabis underscores the urgent need for effective rehabilitation facilities. This study examines the application of therapeutic design strategies to optimize healing in drug rehabilitation centers in Kano. A qualitative research approach was employed; utilizing case studies of three rehabilitation centers Amana Sanatorium, Kano State Rehabilitation Center, and Aminu Kano Teaching Hospital Rehabilitation Ward, these case studies were complimented by interviews and structured observations. Findings from the three case studies revealed significant variability in the integration of therapeutic strategies; Amana Sanatorium achieved moderate efficiency in natural exposure but lacked recreational and therapy facilities. Kano State Rehabilitation Center scored lowest across all variables, reflecting systemic neglect of healing design and Aminu Kano Teaching Hospital Rehabilitation ward performed relatively better, particularly in exposure to nature and use of open spaces, though it also lacked structured therapy provisions. Furthermore, it has been observed that most facilities lack essential therapeutic design features, such as natural lighting, ventilation, color therapy, open spaces, and recreational provisions, which are crucial for fostering healing environments. The study identifies natural elements, spatial organization, and sensory design strategies as key contributors to improved recovery outcomes. These insights provide practical recommendations for architects, healthcare planners, and policymakers in Nigeria to integrate therapeutic principles into future rehabilitation projects.

**Keywords:** Therapeutic design, Drug rehabilitation, Healing architecture, Physical environment, Nigeria

## I. INTRODUCTION

Drug addiction is a widespread issue affecting millions globally, with significant implications for public health and social stability. The World Health

Organization (WHO) highlights substance abuse as a major health challenge, contributing to a range of physical and mental health problems (WHO, 2022). In many countries, including Nigeria, the prevalence of substance abuse, such as tramadol, codeine, and other cough syrups, is rising, necessitating effective rehabilitation solutions (UNODC, 2021).

Despite growing awareness of the benefits of therapeutic design, many drug rehabilitation centers worldwide, including those in Nigeria, often do not fully embrace these principles. Evidence suggests that therapeutic design elements, such as the incorporation of natural light, soothing colors, and effective spatial layouts, can significantly enhance patient recovery and alleviate stress (Cohen et al., 2019). In contrast, facilities that lack these design features may experience reduced effectiveness in their rehabilitation programs, which can lead to higher relapse rates and extended recovery times (Browning et al., 2014).

The design of rehabilitation centers is increasingly recognized as a critical factor in the success of treatment programs. Research indicates that therapeutic design principles, such as integrating natural elements, ensuring adequate lighting, and creating calming environments, can significantly impact recovery outcomes (Ulrich, 1984). For instance, studies have shown that environments with natural views can accelerate recovery from surgery (Ulrich, 1984), and environments designed to reduce stress can improve overall mental health (Hatch, 2006). Furthermore, the importance of environmental design in healthcare settings is emphasized by recent research that demonstrates how well-designed spaces can support mental health and recovery (Day, 2002).

Research has extensively explored the impact of therapeutic design on health outcomes in various

settings, for example, (Ulrich, 1984) demonstrated that natural views could enhance recovery times in hospital patients, while (Kaplan & Kaplan 1989) discussed the psychological benefits of natural environments. According to Day (2002), He supported the role of environmental design in improving mental health and recovery in healthcare facilities. However, there is limited research specifically addressing the application of these principles within drug rehabilitation centers. Most studies have been conducted in general healthcare settings or different cultural contexts, highlighting a need for further investigation into how these design strategies can be effectively applied to drug rehabilitation facilities.

## II. LITERATURE REVIEW

### Concept of Therapeutic Architecture

Therapeutic architecture is a design concept that seeks to create physical environments that support healing, well-being, and human flourishing. It is an interdisciplinary field that draws on architecture, psychology, neuroscience, and other fields to create spaces that are conducive to health and wellness (Ulrich, Bogren, Grdiner, & Lundin, 2018). The concept of therapeutic architecture has gained significant attention in recent years, as study has shown that the physical environment can have a significant impact on human health and well-being (Marcus & Sachs, 2014). Similarly, this study considered optimum utilization of physical environment with positive impact to healing drug addicts in rehabilitation center.

One of the key principles of therapeutic architecture is the use of natural light and views of nature. Research has shown that exposure to natural light and nature can have a positive impact on mood, sleep, and overall well-being (Ulrich, 1984). Ulrich further states that patients in hospital rooms with windows overlooking nature had shorter hospital stays, required fewer pain medications, and reported higher levels of satisfaction than patients in rooms without views of nature. This study correspondingly provides adequate windows exposed to nature.

Another principle of therapeutic architecture is the use of color, texture, and other sensory elements to create a calming and healing environment. Research has shown that certain colors, such as blue and green, can have a calming effect on the mind and body

(Valdez & Mehrabian, 1994). Similarly, the use of natural materials, such as wood and stone, can create a sense of warmth and comfort that is conducive to healing (Kellert, 2008). Therefore, the use of natural elements and the above mentioned colours is strongly encouraged in the design of drug rehabilitation centers.

Although therapeutic strategies such as natural daylighting, ventilation, and color therapy have been linked to reduced stress and improved emotional stability (Ulrich et al., 2018), Nigerian rehabilitation centers typically adopt an institutional rather than healing-focused design, leading to overcrowding, poor ventilation, and limited recreational facilities (Okoli & Agbakwuru, 2019). This gap underscores the urgent need for evidence-based design strategies tailored to the Nigerian sociocultural and climatic context.

### The Concept of Drug Rehabilitation Center

Rehabilitation centers, also known as rehab centers, are facilities that offer specialized treatment programs to individuals suffering from drug addiction, alcoholism, or other addictive disorders. The aim of rehabilitation centers is to help patients overcome their addiction, regain their physical and mental health, and learn how to live a healthy, drug-free life. Drug rehabilitation centers play a crucial role in the management of drug addiction, which is a major public health problem worldwide (Katyal, 2002). An aspect of rehabilitation center design is creating spaces that promote social interaction and community building. Patients in rehabilitation centers often feel isolated and lonely, which can hinder their recovery process. Therefore, communal spaces such as dining halls, activity rooms, and outdoor spaces can provide opportunities for patients to interact with each other, form social connections, and engage in recreational activities (Reed & Stanish, 2012).

In addition, rehabilitation centers need to be designed to accommodate patients with disabilities. This includes providing accessible entrances, corridors, and bathrooms, as well as specialized equipment and technologies that can assist patients with mobility or communication difficulties (Carnemolla et al., 2015). Finally, rehabilitation centers must prioritize patient safety and security. This includes designing spaces that are easy to navigate, well-lit, and free from hazards, as well as implementing security measures

such as surveillance cameras, alarms, and access control systems (Carnemolla et al., 2015).

Despite the global literature strongly supports therapeutic architecture in healthcare (Ulrich, 1984; Marcus & Sachs, 2014), Nigerian rehabilitation centers rarely integrate such principles. According to Nwachukwu and Obioha (2020) and Adeoye (2021), they emphasize that most Nigerian drug treatment facilities are constrained by inadequate infrastructure, limited funding, and poor spatial design, which undermine recovery outcomes. Specifically in Kano, the National Bureau of Statistics (NBS, 2022) reported high rates of drug misuse, yet available rehabilitation centers often lack patient-centered environments.

### III. MATERIALS AND METHODS

A qualitative research approach was used for the study to gain a clear understanding of therapeutic design strategies and how they help the healing of drug addicts. The case study approach is a prominent qualitative method utilized to investigate a particular subject in-depth from the perspectives of both individuals and groups (Creswell, 2012). Furthermore, this study used observation to gather data, based on the idea that therapeutic strategies are best understood and studied from the perspective of the users (perception), which can be gathered through interviewing the users. Likewise, since examining the therapeutic strategies applied in drug rehabilitation

centers is one of the research objectives, observation by the researcher to assess the measures will best answer the objective.

As a result, three rehabilitation centers in Kano State Nigeria namely; Amana Sanatorium Private Rehabilitation Center, Kano State Rehabilitation Center, and Aminu Kano Teaching Hospital Rehabilitation Ward were selected as case study, and data was acquired through interview and close observation, these cases were selected because the drug prevalence is mostly rampant within the Kano Metropolis. Likert scale was used to comprehend the effectiveness and ineffectiveness of the therapeutic strategies used in the cases studied and the data was analysed using thematic analysis and the results are presented in tables and charts.

### IV. RESULTS AND DISCUSSION

This section present the result of the study, the first section of the chapter provides an overview on the extent to which therapeutic design strategies were applied in the rehabilitation centers in Kano which is obtained through case study of the selected rehabilitation centers, the second section of the chapter presents the perception of the respondents on the suitable therapeutic design strategies that aid the healing of drug addicts using chats to present the responses of each of the rehabilitation center visited, which was obtained through interview.

TABLE 4.1 Assessment of Variables for Case Study I: Amana Sanatorium Private Rehabilitation Center.

| S/N | Variable                           | Considerations  | Level of Application | Comment               |
|-----|------------------------------------|---|----------------------|-----------------------|
| 1   | Exposure to Nature                 | Use of natural ventilation.<br>Use of nature.<br>Use of natural daylight. | 3                    | Moderately Efficient. |
| 2   | Isolation from Distraction         | Isolation from distraction.<br>Single patient room.                       | 2                    | Inefficient.          |
| 3   | Provision of Recreational Facility | Sporting activities.<br>Playgrounds.                                      | 2                    | Inefficient.          |
| 4   | Therapy                            | Art therapy.<br>Color therapy.  | 1                    | Very Inefficient.     |
| 5   | Use of open Spaces                 | Use of courtyard.   | 1                    | Very Inefficient.     |

The result indicates that in Amana Sanatorium private rehabilitation center, it has moderately

efficient exposure to nature; it is inadequately isolated from distraction and also has inefficient

recreational facilities and lacks proper use of therapy and open spaces. These findings align with Adeoye (2021), who reported that most Nigerian rehabilitation centers prioritize medical interventions over spatial healing strategies. Similar patterns were

observed in a study of rehabilitation facilities in Lagos by Oladipo and Lawal (2020), where poorly ventilated wards and absence of nature-integrated spaces contributed to patient dissatisfaction and slower recovery rates.

TABLE 4.2 Assessments of Variables for Case Study II: Kano State Rehabilitation Center.

| S/N | Variable                           | Considerations  | Level of Application | Comment           |
|-----|------------------------------------|---|----------------------|-------------------|
| 1   | Exposure to Nature                 | Use of Natural Ventilation.<br>Use of Nature.<br>Use of Natural Daylight. | 1                    | Very Inefficient. |
| 2   | Isolation from Distraction         | Isolation from Distraction.<br>Single Patient Room.                       | 1                    | Very Inefficient. |
| 3   | Provision of Recreational Facility | Sporting activities.<br>Playgrounds.                                      | 2                    | Inefficient       |
| 4   | Therapy                            | Art Therapy.<br>Color Therapy.  | 1                    | Very Inefficient  |
| 5   | Use of Open Spaces                 | Use of Courtyard.   | 1                    | Very Inefficient  |

The result indicates that in Kano State Rehabilitation center, it has very poor exposure to nature, it is very inefficiently isolated from distraction and it has ineffective recreational facilities and also lacks provision of open spaces.

TABLE 4.3 Assessments of Variables for Case Study III: Aminu Kano Teaching Hospital Rehabilitation Ward.

| S/N | Variable                           | Considerations  | Level of Application | Comment               |
|-----|------------------------------------|---|----------------------|-----------------------|
| 1   | Exposure to Nature                 | Use of Natural Ventilation.<br>Use of Nature.<br>Use of Natural Daylight. | 3                    | Moderately Efficient. |
| 2   | Isolation from Distraction         | Isolation from Distraction.<br>Single Patient Room.                       | 3                    | Moderately Efficient. |
| 3   | Provision of Recreational Facility | Sporting activities.<br>Playgrounds.                                      | 1                    | Very Inefficient      |
| 4   | Therapy                            | Art Therapy.<br>Color Therapy.  | 1                    | Very Inefficient      |
| 5   | Use of Open Spaces                 | Use of Courtyard.   | 3                    | Moderately Efficient. |

The result indicates that in Aminu Kano Teaching Hospital Rehabilitation ward, it has moderately efficient exposure to nature, it is moderately isolated from distraction, it has very inefficient recreational facilities, and very inefficient use of therapy and open spaces were moderately efficiently used.

The three case studies revealed significant variability in the integration of therapeutic strategies. Amana Sanatorium achieved moderate efficiency in natural exposure but lacked recreational and therapy facilities. Kano State Rehabilitation Center scored lowest across all variables, reflecting systemic neglect of healing design. Aminu Kano Teaching Hospital Rehabilitation Ward performed relatively

better, particularly in exposure to nature and use of open spaces, though it also lacked structured therapy provisions.

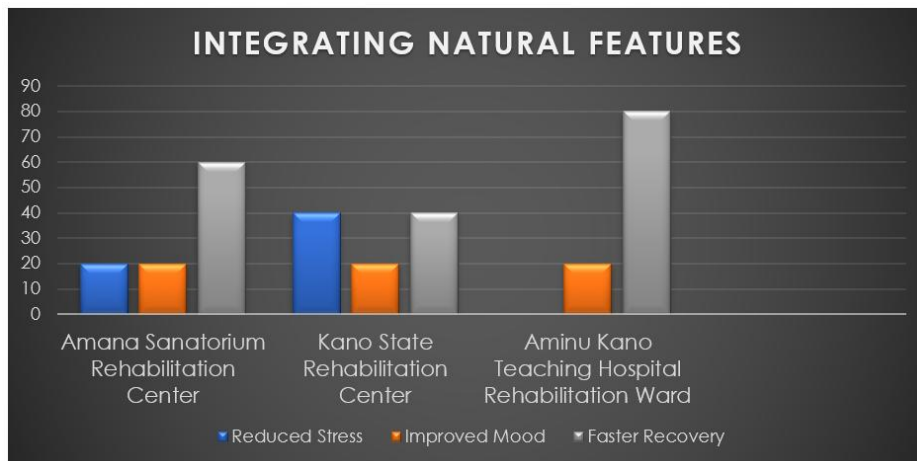


Figure 4.1: Perception of Respondents on Integrating Natural Features.

According to figure 4.1, Amana Sanatorium Private Rehabilitation Center has substantial number of patients whom were of the opinion that integrating natural features have the ability to reduce stress, some are of the opinion that it improves mood and majority of the patient are of the opinion that it makes them recover faster. While in Kano State Rehabilitation Center, it has substantial number of the patients having the opinion that integrating natural features reduces stress, some were of the opinion that it improves mood and majority of the patients are of the opinion that it makes them recover faster. However in Aminu Kano Teaching Hospital Rehabilitation ward, none of the patients were of the opinion that it reduces stress, substantial numbers of the patients are of the opinion that it improves mood and majority of

the patients are of the opinion that it makes them recover faster. These findings highlight the varying degrees of benefits that natural features provide in rehabilitation center, they underscore the importance of tailoring rehabilitation environments to best suit the needs and preferences of patients to optimize the healing process.

Patients across Amana Sanatorium and Kano State Rehabilitation Center consistently emphasized the role of natural features in stress reduction and mood enhancement. This is consistent with Ulrich's (1984) "power of the window" theory and a more recent Nigerian study by Adamu and Ibrahim (2019), which found that access to natural elements in psychiatric hospitals significantly improved patient morale.

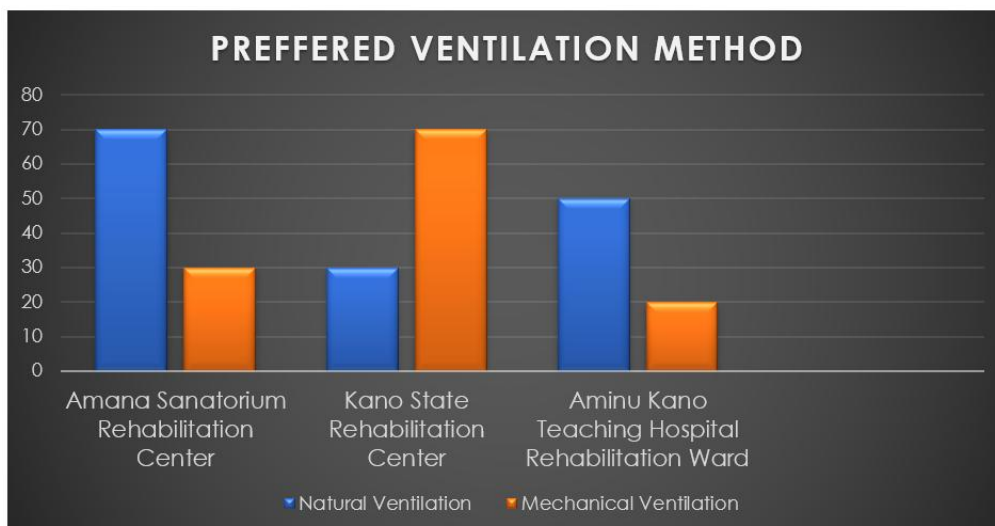


Figure 4.2 Preferred Ventilation Method.

According to figure 4.2, In Amana Sanatorium Private Rehabilitation Center, 5 participants shared their preferences for ventilation methods. The majority of the patients expressed a preference for natural ventilation through windows and open spaces. They believed that fresh air and sunlight played a crucial role in the rehabilitation process, and these elements provided a sense of well-being. While in Kano State Rehabilitation Center, a similar interview involving 5 participants, the consensus among majority of the patients leaned towards mechanical ventilation systems. They believed that controlled airflow and air conditioning helped maintain a comfortable and stable environment, especially in hot or dusty conditions, however in Aminu Kano Teaching Hospital Rehabilitation Center, patients had diverse preferences. Some of the patients and

caregivers favored natural ventilation for its freshness, and some leaned towards mechanical ventilation for its consistency. This diversity in preferences highlights the need for flexible ventilation options. Thus, it is essential to note that the preferred ventilation method can vary depending on individual comfort and specific health conditions.

Patient preferences reflected the climatic realities of Kano. While most favored natural ventilation, some preferred mechanical systems during dust storms or hot seasons. This duality highlights the importance of hybrid ventilation strategies in northern Nigerian contexts, aligning with recommendations by Gambo and Yusuf (2020) on sustainable healthcare design in semi-arid regions.

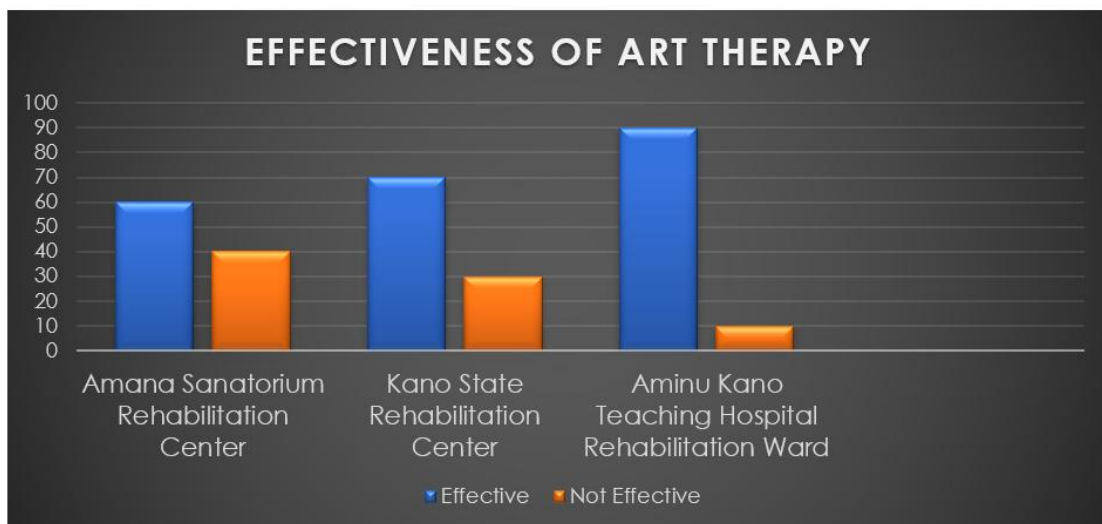


Figure 4.3 Effectiveness of Art Therapy

According to figure 4.3, In Amana Sanatorium Private Rehabilitation Center, it was evident that majority of the patients expressed a positive view of art therapy as an effective tool in their recovery process; they mentioned that engaging in art therapy sessions allowed them to explore and express their emotions in a non-threatening and creative way while in Kano State Rehabilitation Center, a similar trend emerged from the interview. The patients shared their experiences and emphasized the therapeutic value of art therapy, majority mentioned that art therapy helped them develop a sense of self-awareness and a deeper understanding of the root causes of their addiction. However in Aminu Kano Teaching Hospital Rehabilitation Center, the interview revealed consistent support for the effectiveness of art therapy as part of the rehabilitation process,

majority of the patients in this center reported that art therapy sessions offered a unique avenue for self-expression and healing. They felt that creating art helped them regain a sense of control and purpose in their lives.

Patients in all three centers reported positive outcomes from art therapy, particularly in emotional expression and self-awareness. This mirrors Reed and Stanish's (2012) findings in global rehabilitation settings and reinforces the need for structured therapy spaces in Nigerian centers

## V. CONCLUSION

This study demonstrates that current drug rehabilitation facilities in Kano lack adequate

therapeutic design strategies, undermining their capacity to support optimal recovery. By integrating natural elements, personalized spaces, and sensory design interventions, rehabilitation environments can significantly improve patient outcomes. The findings reaffirm global evidence while contextualizing it within the Nigerian setting, highlighting gaps, opportunities and room for improvement in terms of establishing eco-friendly recovery environments.

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