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IMPROVING THE DESIGN OF PEDIATRIC REHABILITATION CENTRE USING ENVIRONMENTALLY FRIENDLY IDEAS: CASE STUDY OF SOME SELECTED HOSPITALS IN SOUTH-EAST NIGERIA

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Abstract

Pediatric rehabilitation centres play a vital role in the long-term recovery and developmental support of children with physical, neurological, or musculoskeletal conditions. Yet in many Nigerian hospitals, the architectural design of these centres neglects children's environmental and emotional needs, which are essential for healing. This study examines how environmentally responsive design can improve pediatric rehabilitation centres in South-East Nigeria, focusing on two case hospitals: Federal Medical Centre, Owerri, and Amanda Hospital, Imo State. A mixed-methods approach combined site observations and semi-structured interviews with healthcare staff, caregivers, and administrators, alongside secondary data from journals and design manuals. Key dimensions assessed include spatial organisation, natural ventilation, daylighting, sensory qualities, landscape integration, and material choice. Findings reveal limited child-centred features, weak connection to nature, and minimal adoption of eco-friendly design strategies. Environmental comfort, emotional well-being, and functional efficiency emerged as critical gaps affecting therapeutic experience and outcomes. The study proposes context-sensitive design principles for Nigerian pediatric rehabilitation, emphasising biophilic elements, adaptive spatial layouts, and passive environmental control. The research contributes to healthcare architecture and sustainable design discourse and offers a practical framework to guide architects, policymakers, and health planners in transforming paediatric rehabilitation facilities in resource-constrained settings

Keywords: Environmentally Friendly, Green Building Practices, Healing Environments, Pediatric Rehabilitation Centre, Sustainability

INTRODUCTION

According to the World Health Organization, pediatric rehabilitation serves as a critical component in the continuation of healthcare services, providing therapeutic support to children recovering from injuries, neurological impairments, congenital anomalies, and chronic conditions (World Health Organization, 2017). However, in many Nigerian health institutions,

especially in the South-East region, the design of pediatric hospitals remains generic, often resembling adult-focused medical spaces that neglect the unique needs of children. These environments are commonly devoid of sensory-rich features, child-friendly layouts, and nature-inclusive designs that have been shown to aid cognitive and emotional recovery in children (Shepley, 2016).

Globally, the healthcare architecture field is increasingly recognizing the therapeutic benefits of incorporating environmentally responsive design into pediatric spaces. Biophilic design principles, such as the use of daylight, natural ventilation, organic materials, and access to green spaces, have been associated with reduced stress, shorter recovery times, and improved patient engagement, particularly among children (Kellert & Calabrese, 2015) and (Ulrich, 2008). In contrast, most rehabilitation units in Nigeria lack these healing features due to factors like budget constraints, limited awareness of pediatric-centered design standards, and a lack of interdisciplinary collaboration during planning stages.

The rising incidence of childhood disabilities due to pre-natal complications, infectious diseases, and trauma further highlights the urgent need for responsive and well-designed rehabilitation spaces (Federal Ministry of Health, 2021). As the demand for pediatric rehabilitation services grows, hospital infrastructure must evolve to accommodate not only medical technologies but also the environmental and psychological needs of children and their caregivers. Unfortunately, limited scholarly work exists on how to integrate sustainable design in pediatric healthcare architecture within the Nigerian context. This study aims to bridge that gap by exploring the application of environmentally friendly ideas in the design of pediatric rehabilitation centres in two selected hospitals in South-East Nigeria.

LITERATURE REVIEW

Concept of Pediatric Rehabilitation

Pediatric rehabilitation is a specialized branch of healthcare that aims to restore function, promote independence, and improve the quality of life for children suffering from injuries, developmental disorders, or congenital conditions (Law et al., 2007). Rehabilitation in children often requires a holistic approach; one that integrates physical therapy, occupational therapy, speech therapy, and psychological support. According to Rosenbaum and Gorter (2012), pediatric rehabilitation differs from adult rehabilitation in that it must adapt to the child's continuous developmental needs, involving play-based therapy and long-term follow-up.

In many developing countries, including Nigeria, pediatric rehabilitation units are often under-resourced and poorly designed, resulting in environments that are functionally inadequate and emotionally sterile for child recovery.

Environment and Healing in Pediatric Design

There is growing recognition of the link between physical environments and recovery in pediatric healthcare. Ulrich (2008) noted that the health of patients improves in environments that are calm, welcoming, and include natural elements like plants, daylight, and access to views. These design elements influence stress levels, behaviour, and even physiological markers, such as blood pressure and heart rate. For children, who are more sensitive to their surroundings, such features can play a very important role in shaping their therapy experience, and ultimately, satisfaction (Nastasi, 2015). For greater inclusivity, the need for meaningful social interaction must be considered with equal importance for vulnerable groups such as psychiatric children and young adults for outdoor spaces to drive higher patient satisfaction (McLaughlan, 2018; Onwuzuligbo et al., 2025).

The concept of the "healing environment" emphasizes not only cleanliness and safety but also emotional comfort, sensory engagement, and psychological support (Devlin & Arneill, 2003). Study shows that pediatric patients respond better to interactive designs, child-friendly colours, and nature-integrated spaces that support movement, play, and relaxation. So when the design of a pediatric rehabilitation centre caters to a child's cognitive and emotional needs, recovery becomes more than just clinical, it becomes developmental.

Sustainable Design in Healthcare Architecture

Sustainable design or environmental friendliness in healthcare aims at reducing negative environmental impacts while enhancing the health and well-being of patients and staff. The core principles of sustainable design include energy efficiency, natural lighting and ventilation, water conservation, waste reduction, and use of low-impact materials (Kats, 2003). According to the U.S. Green Building Council (2021), green hospitals can lower operating costs and carbon emissions, while improving patient comfort.

Biophilic design, a key component of sustainable architecture, promotes the inclusion of nature-inspired features such as greenery, water elements, textured natural materials, and organic forms, and is widely applied in diverse institutional settings such as hospitality, educational and healthcare (Umeora et al., 2025; Ifebi et al., 2024; Terblanche & Khumalo, 2025). In healthcare, this concept has gained traction in pediatric design due to its capacity to reduce anxiety, improve focus, and promote emotional balance (Kellert & Calabrese, 2015). When sustainable design is properly integrated into pediatric rehabilitation spaces, it becomes more than an aesthetic choice; it becomes a medical strategy (Jackson & Kochtitzky, 2010).

However, in Nigeria, only a few hospitals incorporate such features. This is because financial constraints, limited awareness, and a lack of local green building policies hinder the widespread adoption of sustainable principles in pediatric units. Research suggests that integrating green strategies, like daylighting, passive cooling, and eco-friendly materials, could improve both energy performance and therapeutic effectiveness, even in low-resource settings.

Child-Centered Design: Principles and Application

Child-centered design refers to architectural planning that prioritizes the cognitive, physical, and emotional needs of children. According to Olds (2001), this involves flexible spaces, playful elements, intuitive circulation, and access to sensory stimuli. In pediatric rehabilitation settings, these design principles must accommodate mobility aids, therapy equipment, caregivers' needs, and interaction between therapists and children. Spaces should also allow for individual therapy, group activities, and quiet rest zones (Ghazali & Abbas, 2012).

International design standards suggest that pediatric rehabilitation centres should be colorful, well-lit, and acoustically balanced, with accessible indoor-outdoor transitions (Shepley, 2016). Wayfinding aids, child-scale furniture, and inclusive design for children with physical or sensory limitations are also critical (Pediatric Environmental Design Guidelines, 2020). Studies shows that when children are involved in playful and familiar settings, they become more engaged in therapy and exhibit fewer behavioral disruptions (Whitehouse, 2001).

Unfortunately, most Nigerian hospitals follow a general-purpose layout with little customization for children. During my case study research, I discovered that rehabilitation wards often lacked clear zoning for therapy, play, rest, and social interaction. This not only limits treatment efficiency but also affects emotional security and motivation during recovery.

Lessons from International Practice

Global best practices in pediatric rehabilitation architecture demonstrate how design can be both sustainable and therapeutic. For instance, the Maggie's Centres in the UK combine natural materials, abundant light, and garden views to reduce stress and support emotional healing (Hickman, 2013). In the United States, the Children's Hospital of Pittsburgh integrates sensory walls, skylights, and outdoor therapy gardens to encourage mobility and exploration (Hamilton & Watkins, 2009).

In India, the Amar Jyoti Rehabilitation Centre incorporates solar panels, rainwater harvesting, and shaded courtyards in its pediatric facility, reducing both environmental impact and patient discomfort in a hot climate. These examples show that sustainable pediatric spaces are achievable, even in developing countries, when architects collaborate closely with health professionals, caregivers, and community stakeholders.

Adapting such strategies in Nigeria requires contextual awareness; respecting climate, culture, budget, and user needs. Hospitals in the South-East region, for example, must consider humidity, erratic power supply, and extended family support systems when designing for pediatric care. Environmentally friendly architecture can still be achieved through low-tech strategies like cross ventilation, orientation for natural daylight, shaded verandas, and using local, non-toxic building materials.

From this literature review, it is evident that:

1. Pediatric rehabilitation centres in Nigeria rarely prioritize child-centered or sustainable design principles.
2. Most facilities lack sensory stimulation, playful zones, or outdoor spaces that are critical to child recovery.
3. Green building principles, although widely applied globally, are underutilized due to poor policy integration, financial barriers, and lack of training.
4. There's little localized research on the connection between pediatric architecture, environmental sustainability, and therapeutic outcomes in Nigeria.

This study seeks to close these gaps by evaluating current practices and proposing design solutions that align with both environmental responsibility and the therapeutic needs of children.

METHODOLOGY

This study focuses on improving the design of pediatric rehabilitation centres through the application of environmentally friendly ideas. Specifically, this study examines the design features of pediatric rehabilitation facilities within two hospitals located in South-East Nigeria: Federal Medical Centre, Owerri and Amanda Hospital, Owerri. These hospitals were selected due to their role in providing pediatric rehabilitation services in the region, and they represent a cross-section of both public and private healthcare systems in South-East Nigeria.

The study examines how environmental sustainability in design could be incorporated into these spaces to improve not only the functional use of space but also the emotional and physical recovery of pediatric patients.

Participants

The study involved participants who are directly involved in the rehabilitation process within paediatric centres in the southern region of Nigeria. These participants included:

i. **Healthcare professionals**: Doctors, nurses, physiotherapists, and rehabilitation specialists who have first-hand knowledge of the challenges and needs of children undergoing rehabilitation.

ii. **Children**: Although children were not directly interviewed, their experiences were observed during the course of the study, and insights into their emotional and physical responses to the environment were gathered from healthcare professionals and caregivers.

The selection of participants was based on purposive sampling, which is a technique commonly used in qualitative research to identify individuals who have specific knowledge and experience relevant to the study. These centres were chosen based on their varying levels of infrastructure,

size, and geographical location, offering a representative cross-section of paediatric rehabilitation facilities in the region.

Data Collection Method

To fully understand the current design of pediatric rehabilitation centres and explore the potential for improvement with environmentally friendly ideas, data were collected using a combination of qualitative and quantitative methods. These methods allowed for an in-depth examination of both physical space and the human experience within the context of these hospitals.

Site Observation

Observations were carried out in both hospitals to assess the current design and functionality of the pediatric rehabilitation units. The focus was on the following aspects of the physical environment:

1. **Spatial Arrangement**: Evaluating whether the layout is child-friendly, functional, and promotes ease of access for both patients and staff. This includes checking how therapy rooms, waiting areas, and caregiver spaces are arranged.
2. **Lighting and Ventilation**: Analyzing natural lighting, artificial lighting, and ventilation, including whether windows are placed to maximize natural light, the presence of cross ventilation, and whether air quality is maintained.
3. **Green Spaces**: Observation of whether the rehabilitation units have outdoor spaces such as gardens or patios, which have been shown to have therapeutic benefits. Green spaces provide children with a connection to nature and promote emotional well-being.
4. **Sustainable Features**: The use of materials that promote sustainability (e.g., non-toxic paints, renewable materials, water-saving fixtures, solar panels) and eco-friendly design strategies, such as energy-efficient lighting and rainwater harvesting.

Photographs were taken to visually document the layout, design features, and the presence (or absence) of environmental sustainability measures.

Data Analysis

The data collected through observations, interviews, and case studies was carried out in the following health centres:

1. Federal Medical Centre Owerri, Imo State
2. Amanda Hospital Inc. Owerri, Imo State

Case Study One: Federal Medical Centre

Location: Located along the 105 Hospital Road, Orlu Rd, Owerri, Imo State, Nigeria.

Federal Medical Centre, Owerri is a general hospital, which was founded in 1995 by the federal government. This hospital has facilities, which attends to various medical services which includes paediatric, maternity, orthopaedic, physiotherapy, accident and emergency services etc. to the general public. Under the paediatric services, the Federal Medical Centre has different units that is dedicated to attending to the needs of children under the care of the hospital. These facilities include:

a) Emergency Paediatric Unit

b) Children Inpatient Unit

c) Children Outpatient Unit

d) Pharmaceutical

e) Surgical Unit

Plate 1: This shows the external view and the entrance of the Emergency Paediatric Unit
Source: Fieldwork (2025)

Plate 2: The internal view of the Emergency Paediatric Unit
Source: Fieldwork (2025)

Plate 3: Showing the waiting area at the Children out Patients section of the Paediatric Unit
Source: Fieldwork (2025)

Plate 4: Showing the garden for the paediatric unit
Source: Fieldwork (2025)

Plate 5: Showing the circulation space outside the Surgical ward at the 2nd floor of the Paediatric unit building
Source: Fieldwork (2025)

Merit:

1. Adequate circulation area was provided to facilitate ease of movement and flow of both patient, guardians and medical staff.
2. The spaces at the Emergency Paediatrics Unit was properly zoned and defined with signages.
3. Pedestrians' walkways were provided.
4. The wards where properly ventilated and had proper natural lighting.
5. Mechanical aid such as ramps and staircases for transporting patients, were provided.

Demerits

1. There was not enough room for parents and guardians to rest and relax.
2. The facility didn't have enough space provided for triage.
3. The Pediatric unit didn't a proper space provided for pharmaceutical dispensation.
4. There was no provision of physiotherapy unit for therapy and rehabilitation of children.
5. The distance between the clinical and the wards where far apart.

Deductions

1. Adequate spaces should be provided for parents and guardians to rest and relax.
2. The facility should provide enough space provided for triage.
3. Proper space should be provided for pharmaceutical dispensation in the Pediatric unit.
4. The clinical and the wards should be at a close distance.

Case Study Two: Amanda Hospital

Location: Located along Plot 412-415, Works Layout, Imo, Owerri, Nigeria

Components of Amanda Hospital, Owerri, Imo state

1. The Federal Medical Centre Owerri, has a total bed capacity of 20 beds. \
2. The hospital is made up of medical consultants, nurses, doctors and other healthcare professionals.
3. The facility has handled multiple cases, of which paediatric treatment is the most common amongst them.

4. The hospital is made up of sick patients, both young and old, accident victims, medical practioners which includes nurses and doctors.

Facilities and Spaces in Amanda Hospital, Owerri, Imo state

1. Triage
2. Resuscitation Room: 2 beds
3. Consulting Rooms 3
4. Surgery Room: 2
5. Pharmacy
6. Waiting Area
7. Nurses Station
8. Emergency Entrance
9. X-ray Room
10. Laboratory
11. Doctor's Call-Duty Room
12. Convenience

Plate 7: This shows the parking lot and the main entrance of Amanda Hospital Owerri, Imo state

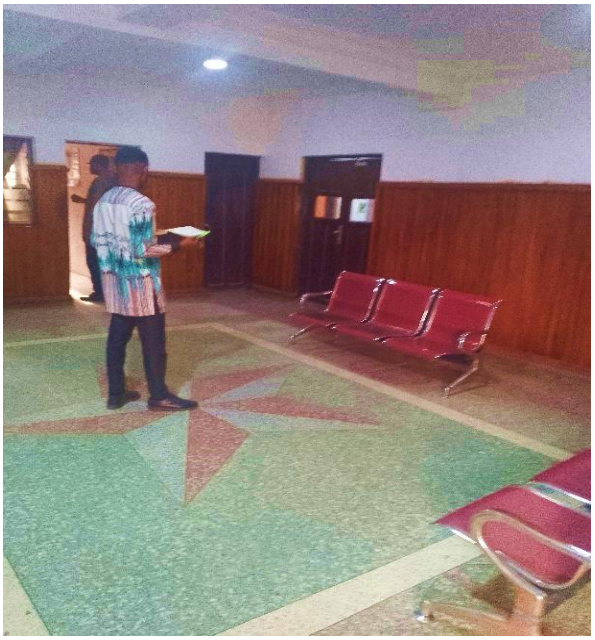

Plate 8: Showing the Triage and waiting area at Amanda Hospital

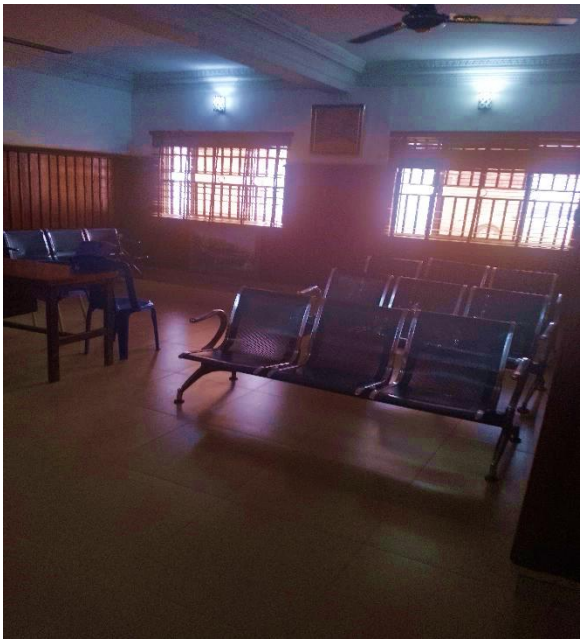

Plate 9: Showing the waiting area at Amanda Hospital

Plate 10: Showing the Emergency Entrance of the Hospital

Merits

a. The hospital corridor measures about 2400m wide, which is quite appropriate.

b. There is a big triage that can accommodate about 5-10 patients.

c. It has an open space, which helps to lighten up the spaces surrounding it.

Demerits

a. The facility is not properly maintained.

b. There is inadequate bed capacity to accommodate the patients.

b. The conveniences provided for the patients were insufficient.

c. It has a very poor landscape

d. There was no standard space provided to attend to the needs of children who come for paediatric care.

Deductions

a. Provision of adequate rooms to accommodate patients.

b. Proper zoning of spaces to facilitate the efficient delivery of paediatric services

DISCUSSIONS

This study presents an interpretation of the findings from the two case study hospitals: Federal Medical Centre, Owerri and Amanda Hospital, Owerri. The results from the data collected through site observations, interviews, and document reviews are analyzed within the context of pediatric rehabilitation design, particularly with a focus on environmental sustainability and the child-centered features of these spaces.

The findings from the study indicate significant gaps in the design of pediatric rehabilitation units in both hospitals, particularly in terms of environmental sustainability and child-friendly design elements. These results reflect the growing need to incorporate eco-friendly design principles in Nigerian healthcare facilities to improve both functionality and therapeutic outcomes. The key findings include inadequate integration of natural elements, poor spatial organization, and absence of environmentally sustainable features, such as natural lighting, cross ventilation, and green spaces, all of which are essential for promoting healing in children undergoing rehabilitation.

The Role of Environmentally Friendly Features

A key aim of this study was to examine the potential of environmentally friendly design features in improving pediatric rehabilitation spaces. According to the results, both hospitals showed limited integration of sustainable design principles. For instance, the lack of natural ventilation and daylighting systems pointed to a reliance on energy-intensive air conditioning systems and artificial lighting. The absence of rainwater harvesting systems, solar panels, or energy-efficient lighting was another indicator of missed opportunities for creating more sustainable and cost-effective spaces (Kellert & Calabrese, 2015).

The absence of these eco-friendly elements not only undermines the hospitals' potential to reduce operational costs but also limits their ability to promote a healing environment for young patients. It is well documented that incorporating green features, such as energy-efficient designs and the use of natural materials, can reduce stress, enhance healing, and foster a better quality of life for patients (Jackson & Kochtitzky, 2010).

Child-Centered Design

The concept of child-centered design; which emphasizes the importance of creating spaces that prioritize the emotional and developmental needs of children—was omitted from the design of the pediatric rehabilitation units in the case study hospitals. Despite the global recognition of the importance of designing child-friendly healthcare spaces (Olds, 2001), the study revealed that both hospitals lacked features such as playful elements, interactive walls, and child-scaled furniture. These elements are essential to not only engage children during rehabilitation but also to make the hospital experience less intimidating and more enjoyable (Söderback, 2004).

In contrast, hospitals with child-friendly designs—such as the Children's Hospital of Pittsburgh, which integrates sensory-rich features and outdoor therapy gardens—have demonstrated significant improvements in patient engagement and psychological recovery (Hamilton & Watkins, 2009). These global best practices provide valuable insights into how simple changes in design could have a profound impact on the effectiveness of pediatric rehabilitation in Nigerian hospitals.

Environmental Sustainability in Low-Resource Settings

One of the central arguments of this study is that environmentally sustainable design is not only feasible in low-resource settings like South-East Nigeria but is also crucial for reducing long-term operational costs and promoting a healthier environment. The case study hospitals showed how the lack of sustainable design features directly impacted hospital costs and environmental quality. The absence of eco-conscious designs in Nigerian hospitals reflects broader challenges in the healthcare infrastructure, including budgetary constraints and insufficient knowledge of green building practices.

Nevertheless, simple, cost-effective solutions such as the use of local materials, proper orientation for natural ventilation, and eco-friendly lighting systems can provide immediate benefits. According to Onwuzuligbo et al., (2025), and Echeta et al. (2023), even in resource-constrained settings, small-scale environmental improvements can significantly reduce energy costs and improve user satisfaction. For instance, using locally sourced, non-toxic materials could reduce construction and operational costs, while creating healthier environments for both patients and staff.

Implications for Policy and Practice

The findings of this study underscore the need for policy reforms in healthcare infrastructure planning. For pediatric rehabilitation centres, both government and private sector stakeholders should prioritize child-friendly, sustainable designs in future healthcare projects. Policymakers should integrate green building regulations into hospital design guidelines to ensure that new and existing facilities prioritize sustainability and child well-being (WHO, 2017). This will not only support healthier rehabilitation environments but also align Nigerian healthcare systems with global sustainable development goals (SDG 3 and SDG 11) (UNDP, 2022).

Healthcare planners and architects need to collaborate closely with medical staff, caregivers, and children to understand their specific needs and create spaces that support both physical recovery and emotional healing. Furthermore, sustainable design training should be integrated into the curriculum for architects and healthcare professionals in Nigeria to build capacity in this area.

In conclusion, this study has highlighted significant gaps in the design of pediatric rehabilitation units in South-East Nigeria and the potential for improvement through environmentally friendly and child-centered design principles. The findings suggest that adopting sustainable design features and rethinking spatial organization could significantly enhance the therapeutic

environment for children. Despite challenges related to financial constraints, the integration of eco-friendly practices should be seen as an investment in both the health of patients and the long-term sustainability of healthcare systems in Nigeria.

CONCLUSION AND RECOMMENDATION

This study explored the design of pediatric rehabilitation centres in South-East Nigeria, focusing specifically on Federal Medical Centre, Owerri and Amanda Hospital, Owerri. The aim was to evaluate the potential for improving these facilities by incorporating environmentally friendly and child-centered design elements. The research revealed several key findings regarding the current state of the hospitals' design, the importance of integrating sustainable features, and the overall impact of the built environment on pediatric rehabilitation outcomes.

The findings indicated that both hospitals lacked child-friendly features, such as play areas, interactive design elements, and sufficient natural light, all of which are crucial for improving the emotional and psychological well-being of young patients. Additionally, the hospitals showed minimal integration of environmentally friendly design features, such as natural ventilation, solar energy systems, and eco-friendly materials, which are essential for both patient comfort and the long-term sustainability of healthcare facilities (Kellert & Calabrese, 2015).

These deficiencies highlight the need for an intentional shift toward designs that prioritize both the physical and emotional recovery of children undergoing rehabilitation. While financial constraints and limited knowledge of green building practices were identified as barriers to the incorporation of such features, this study demonstrates that environmentally sustainable and child-centered design is not only feasible in low-resource settings like South-East Nigeria but also crucial for enhancing healthcare delivery and patient outcomes.

This research emphasizes the importance of integrating sustainable design principles in the planning of pediatric rehabilitation spaces, as such features can directly impact the healing process. With the right combination of financial investment, government support, and awareness-building initiatives, it is possible to create rehabilitation environments that are both therapeutic and environmentally responsible.

Recommendations

Based on the findings of this study, the following recommendations are made for improving the design of pediatric rehabilitation centres in South-East Nigeria:

1. Adoption of Child-Centered Design Principles

Hospital architects and planners should prioritize child-centered design in pediatric rehabilitation units. This includes creating spaces that cater to the developmental needs of children, such as:

a) **Dedicated play areas** to encourage children's participation in therapy.

b) **Interactive, sensory-rich environments** that stimulate cognitive and emotional development.

c) **Child-scaled furniture and wayfinding systems** to ensure ease of movement and accessibility for children with mobility aids.

The inclusion of playful design features such as colorful walls, therapeutic murals, and spaces that encourage interaction and exploration would reduce stress, provide comfort, and increase engagement during rehabilitation (Olds, 2001).

2. Integration of Environmentally Friendly Features

Both hospitals should incorporate sustainable and eco-friendly design elements into the planning and renovation of their pediatric rehabilitation units. This could include:

a) **Maximizing natural light** through well-placed windows and skylights to improve mood and reduce the need for artificial lighting.

b) **Natural ventilation** systems that allow for air circulation and reduce dependency on energy-intensive air conditioning systems.

c) The **use of sustainable building materials**, such as non-toxic paints, renewable materials (e.g., bamboo, recycled wood), and energy-efficient windows and insulation.

d) **Water conservation systems** like rainwater harvesting and low-flow plumbing fixtures to reduce resource consumption and lower operating costs.

By incorporating these green building practices, hospitals can not only improve the health of their patients but also reduce their environmental footprint and operational costs (Jackson & Kochtitzky, 2010).

3. Use of Outdoor Spaces for Therapy

Integrating outdoor healing gardens or therapeutic landscapes into pediatric rehabilitation units can have significant psychological and therapeutic benefits. Hospitals should explore the possibility of adding garden spaces or outdoor therapy zones, where children can engage in low-impact physical activities, interact with nature, and recover in a more relaxed and stimulating environment. These spaces have been proven to help children recover faster by providing opportunities for social interaction, stress relief, and physical movement (Ulrich et al., 2008).

4. Capacity Building for Healthcare Planners and Architects

One of the key findings of this study was the lack of awareness regarding sustainable design principles and child-centered healthcare design. To address this gap, healthcare planners and architects should be provided with ongoing training and education in green building practices and pediatric healthcare design. Government and educational institutions could play a key role in

integrating sustainable healthcare architecture into architectural education and professional training.

5. Government and Policy Support

The Nigerian government, in partnership with healthcare providers, should develop policies that promote the adoption of sustainable design in healthcare facilities, particularly in pediatric rehabilitation centres. This could involve:

a) The introduction of incentives for hospitals that implement green building practices.

b) The development of standards and guidelines for eco-friendly healthcare design, tailored to the Nigerian context.

c) Subsidies or financial support for healthcare institutions that wish to implement environmentally friendly changes.

Such policies would encourage the adoption of sustainable practices and child-centered design principles in hospital planning and would help align Nigerian healthcare infrastructure with global trends in sustainable development and patient-centered care (UNDP, 2022).

6. Community Involvement and Awareness

Hospitals should encourage community involvement in the planning and design phases of pediatric rehabilitation centres. Engaging caregivers, hospital staff, and local communities in the design process would ensure that the needs and preferences of those who directly interact with the space are taken into consideration. Additionally, community-based awareness campaigns could educate the public on the benefits of environmentally friendly design and the importance of creating healing environments for children.

Implementing these recommendations will require collaboration among architects, healthcare professionals, patients' families, and local communities to ensure designs that are both functional and culturally sensitive. Addressing these design challenges is imperative to improve the quality of paediatric rehabilitation services in southern Nigeria, ultimately leading to better health outcomes and improved quality of life for children in need.

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