THE ROLE ARCHITECTURE IN THERAPEUTIC HEALING IN EDO STATE, NIGERIA.

BY

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CERTIFICATION

This is to certify that apart from references to other's work which has been credited, this research work is the work of **NWACHUKWU CHINEMEREMNMA GERARD**, matric number; **ENV2006486** and was carried out under the supervision of **ARCHITECT HENRY OMOREGBE (MNIA).** To the best of my knowledge, this work has not been submitted to the University of Benin or to any other institution for the award of any degree or professional certificate.

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DEDICATION

This research work is dedicated to God almighty. To Him who has infinite wisdom and has been my pillar, strength and stronghold throughout my life, from the beginning of my academic journey and in the production of this work. To Him alone be praise and glory forever. Amen.

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ABSTRACT

Therapeutic healing is a very important aspect in the daily lives of the average human being. Without Healthcare facilities, people end up not having a place where they can go to receive treatment when ill or in discomfort. This project aims to explore the critical interplay between architectural design and therapeutic healing outcomes, specifically examining "healing spaces" while within the context of healthcare and wellness facilities in Edo State, Nigeria.

Taking into mind that the importance of clinical treatment is paramount, this study posits that the built environment significantly influences patient recovery, psychological well-being, and the overall efficacy of care delivery.

Drawing upon principles of environmental psychology, biophilic design, and human-centered design, this research investigates how the elements of architecture such as natural light, ventilation, material selection, spatial organization, and access to nature contribute in creating environments conducive to healing and rehabilitation.

The study also aims to identify existing architectural approaches in therapeutic healing facilities across Edo State, analyze their strengths and weaknesses in fostering healing, and propose evidence-based design recommendations tailored to the local cultural, climatic, and resource contexts.

Overall, this project seeks to highlight architecture's often-underestimated role as a therapeutic tool, advocating for its conscious integration into healthcare planning and design to enhance the quality of therapeutic healing for residents of Edo State.

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

The evolution of Healthcare Architecture is shifting towards "healing spaces" that continuously support patient recovery, a paradigm that is gaining popularity in Nigeria and Edo State. Historically, healthcare facilities in Edo State, including both public and private institutions, often gave more priority to basic functionality and cost-effectiveness, leading to issues like inadequate natural light and poor ventilation. As (Akpan-Idiok et al, 2017) indicates, such environmental factors directly influence users' well-being. This past approach often looked past the psychological and emotional needs of patients.

However, there's a growing commitment to improving healthcare quality in Nigeria. The Edo State Government is actively working to strengthen its healthcare services through initiatives like the "IMPACT Project" to transform primary healthcare and the implementation of a coordinated "Annual Operational Plan" for the health sector, including infrastructure upgrades (Nigerian Observer, 2025a; Nigerian Observer, 2025b). The Edo State Ministry of Health's vision further underscores this commitment to quality, accessible, and affordable healthcare (Edo State Ministry of Health, n.d.).

Additionally, Edo State has a rich history of traditional healing practices, with cultural beliefs influencing health perceptions (Ekhaese & Amole, 2014). This local context provides a unique perspective for adapting global "healing architecture" principles, considering the specific cultural and environmental nuances. This study aims to explore how contemporary architectural principles that aid in therapeutic healing, can be effectively applied and evaluated within Edo State, acknowledging the need for contextually sensitive approaches given the practical realities of construction and resource allocation.

1.2 AIM FOR THE STUDY

The major aim of this study is to investigate and articulate the critical role that architectural design plays in fostering positive therapeutic healing outcomes within healthcare and wellness facilities specifically located in Edo State, Nigeria. This research seeks to go beyond merely

identifying existing architectural characteristics; it aims to profoundly understand how these built environments either support or hinder the healing process, psychological well-being, and overall effectiveness of care. Ultimately, by analysing both global best practices and local realities, the study intends to propose contextually relevant and actionable design strategies that can enhance these environments, transforming them into true "healing spaces" that contribute significantly to the health and recovery of residents in Edo State. This includes considering the unique cultural, climatic, and socio-economic factors that define the region of Edo State.

1.3 STUDY AREA

Edo State, Nigeria, will be the centre for the conduction of this study, with a major focus on healthcare and wellness facilities located in the urban and semi-urban areas. Specifically, the research will concentrate on facilities in Benin City and its environments, as this region contains a higher concentration and variety of healthcare institution types (e.g., public hospitals, private clinics, specialized centres). This geographical focus allows for a manageable and in-depth investigation while still providing relevant insights into the local cultural, climatic, and socio-economic context of therapeutic environments within the state.

1.4 STATEMENT OF THE RESEARCH PROBLEM

Despite a growing global recognition of the profound impact of the built environment on health, well-being, and patient recovery, a concept often termed "healing architecture," the integration of these principles into building design in Edo State, Nigeria, remains significantly underdeveloped. Existing healthcare infrastructure in the state, particularly many public facilities, primarily functions as utilitarian spaces for medical treatment, often overlooking crucial architectural elements that could actively contribute to therapeutic processes (Akpan-Idiok et al., 2017; see also findings on design shortcomings in Nigerian general hospitals, FUT Minna, n.d.).

The core of the problem lies in several interconnected issues:

1.4.1 Dominance of Functional-Centric Design: Historically, the design and construction of healthcare facilities in Edo State have largely prioritized basic functionality, cost-effectiveness, and accommodating medical equipment over patient-centered design that considers psychological comfort, stress reduction, and restorative experiences. This often results in environments characterized by poor natural light, inadequate ventilation,

confusing layouts, and a lack of access to nature, which can inadvertently hinder recovery and exacerbate patient distress (HumanCare NY, 2025; ResearchGate, 2017).

1.4.2 Limited Integration of Evidence-Based Design Principles: There is a discernible gap in the consistent application of evidence-based design (EBD) principles, such as biophilic design, noise control, and optimized spatial configurations that have been proven elsewhere to positively influence patient outcomes, reduce medication needs, and shorten hospital stays (HumanCare NY, 2025; MDPI, 2024). This often stems from a lack of awareness, insufficient expertise, or perceived higher costs in the local design and construction sectors.

1.4.3 Negative Impact on Patient and Staff Well-being: The suboptimal physical environment contributes to increased stress and anxiety levels among patients, potentially prolonging recovery times and reducing overall satisfaction with care (PMC, 2019; HumanCare NY, 2025). Furthermore, healthcare providers, who spend significant hours in these spaces, may experience increased stress, fatigue, and reduced job satisfaction due to poorly designed work environments that lack adequate restorative features or efficient layouts (MDPI, 2024; Gavin Publishers, n.d.).

1.4.4 Lack of Contextualized Design Guidelines: While global principles of healing architecture exist, there is a scarcity of specific guidelines or models tailored to the unique socio-economic, cultural, climatic, and resource realities of Edo State, Nigeria. Existing design frameworks may not fully address local material availability, construction methods, cultural preferences regarding privacy and community, or the specific challenges of maintaining complex facilities in the region (Emerald Insight, 2025).

1.4.5 Underutilization of Architecture as a Therapeutic Tool: Architecture's potential as a powerful, non-pharmacological intervention in therapeutic healing remains largely untapped. This represents a lost opportunity to significantly enhance the effectiveness of healthcare services and improve the overall patient and provider experience within Edo State's health sector, despite ongoing government efforts to strengthen healthcare services (Nigerian Observer, 2025a; Nigerian Observer, 2025b).

In conclusion, the problem is that healthcare facilities in Edo State are primarily built as medical containers rather than as active participants in the healing process, leading to missed opportunities for improved patient outcomes and enhanced well-being for all occupants. This

study seeks to bridge this gap by systematically investigating the current situation and proposing viable, context-specific architectural solutions.

1.5 OBJECTIVE OF THE STUDY

This study aims to achieve the following objectives:

1. To review and synthesize existing literature on healing architecture, environmental psychology, and biophilic design.
2. To analyze the current architectural characteristics of selected healthcare and wellness facilities in Edo State, Nigeria.
3. To investigate the perceptions and experiences of patients and healthcare providers this is regarding the impact of the built environment on therapeutic processes.
4. To identify specific challenges and opportunities inherent in implementing healing architectural principles within the socio-economic, cultural, and environmental context of Edo State, Nigeria.
5. To propose a set of contextually relevant and evidence-based architectural design recommendations that can enhance therapeutic healing environments in Edo State.

1.6 RESEARCH QUESTIONS

This study aims to address the following key research questions to explore the role of architecture in therapeutic healing within Edo State, Nigeria:

1. What are the prevalent architectural characteristics of healthcare and wellness facilities in Edo State?
2. How do patients and healthcare providers in these facilities perceive the impact of the physical environment on patient recovery?
3. What specific architectural design recommendations can be proposed to enhance existing and future therapeutic healing environments in Edo State?
4. What are the significant challenges and opportunities for integrating and implementing therapeutic architectural design principles?

1.7 SIGNIFICANCE OF THE STUDY

This study is significant for several key reasons, impacting various stakeholders in Edo State, Nigeria:

1.7.1 For Healthcare Planners and Policy Makers: It offers evidence-based insights on how investing in architectural design can directly improve patient outcomes, reduce stress, and enhance overall well-being. This can guide future budgeting and facility planning to prioritize holistic healing environments.

1.7.2 For Architects and Designers: It provides practical guidance on therapeutic design principles tailored to the Edo State context, encouraging them to create more effective, humane, culturally appropriate, and resource-efficient healthcare facilities. It emphasizes the ethical responsibility of designers in shaping environments that heal.

1.7.3 For Healthcare Providers: The research will highlight how well-designed environments can improve staff effectiveness and job satisfaction, ultimately leading to better patient care.

1.7.4 For Patients and the Community: It raises awareness about how the physical surroundings impact health journeys, empowering them to advocate for better-designed facilities that genuinely support recovery and comfort.

In general, this project aims to provide a higher quality of life and better health outcomes for the citizens of Edo State by promoting the creation of healing spaces, adding to the body of knowledge on evidence-based design in developing nations.

1.8 SCOPE OF THE STUDY

This study focuses specifically on the role of architecture in therapeutic healing within healthcare and wellness facilities located within Edo State, Nigeria. While the broader principles of healing architecture are universal, their application and effectiveness will be looked at in the local context. The study will include a range of healthcare facilities in Edo State, such as public hospitals, private clinics, and rehabilitation centers, and the will be selected based on their accessibility and relevance to therapeutic healing. The study will also focus on the physical environment of these facilities, including aspects of building design, interior layout, material choices, lighting, ventilation, and integration of natural elements. The research will incorporate

both theoretical insights from established literature on healing architecture and practical observations and perceptions from selected sites in Edo State. The "therapeutic healing" aspect will broadly cover environments designed to support patient recovery, well-being, and positive mental states across various health conditions, rather than paying much attention to complex medical instruments or fancy designs.

1.9 RESEARCH METHODOLOGY

This study will use a mixed-methods approach, combining qualitative and quantitative data to understand how architecture creates "healing spaces" in Edo State, Nigeria. Primary data will be gathered through direct architectural observations using a questionnaire to document design elements in selected healthcare facilities. Semi-structured interviews will also be conducted with facility managers, healthcare providers, and patients to understand their perceptions of the environment's impact on well-being and care. Secondary data will be gathered from scholarly articles on healing architecture and government reports on Nigerian healthcare infrastructure, providing theoretical context and international comparisons. This combined approach ensures the research is grounded in real-world practices and supported by academic theory, leading to practical design recommendations for Edo State's healthcare facilities.

1.10 LIMITATIONS TO THE STUDY

1. **SAMPLE SIZE AND GENERALIZABILITY:** For a student project, time and resources are major elements in its completion. Due to the nature of the time required to complete this project, the study will involve a limited number of case studies within Edo State. While efforts will be made to select diverse examples, findings may not be fully generalizable to all healthcare facilities across the entire state or Nigeria.
2. **DATA COLLECTION DEPTH:** The depth of patient and staff perception data may be constrained by ethical considerations, access permissions, and participant availability. Reliance on qualitative data will provide rich insights but may not offer statistical significance.
3. **CAUSALITY:** While the study aims to highlight correlations between architectural design and therapeutic outcomes, establishing direct causality can be complex due to numerous confounding variables in a healthcare setting (e.g., quality of medical treatment, patient's pre-existing conditions, social support). The study will focus on

perceived impacts and design potentials rather than definitive cause-effect relationships.

4. **LONG-TERM IMPACT ASSESSMENT:** Assessing the long-term therapeutic impact of architectural interventions would require longitudinal studies, which are beyond the scope of this project. The focus will be on current conditions and immediate perceptions.
5. **ECONOMIC FACTORS:** While cost-effectiveness and resource availability will be considered in recommendations, a detailed economic feasibility analysis of proposed design interventions is beyond the scope of this architectural study.

1.11 DEFINITION OF TERMS / CONCEPTS

1. **Healing Spaces (or Healing Environments):** This refers to physical environments, particularly within healthcare settings, that are intentionally designed to support and enhance the healing process, promote well-being, and reduce stress for patients, visitors, and staff. These spaces go beyond mere functionality to actively contribute to positive health outcomes. They often use elements that appeal to the senses, offer a sense of control, and provide positive distractions.
2. **Therapeutic Healing:** This encompasses the entire process of recovery, rehabilitation, and restoration of health and well-being from illness, injury, or psychological distress. As pertaining to this project, it extends beyond clinical medical procedures to include the holistic environment in which healing is delivered, recognizing that the physical setting is part of the therapy and actively contributes to the patient's return to health.
3. **Architecture:** While generally referring to the art and science of designing and constructing buildings, in this project it specifically denotes the thoughtful and strategic design of healthcare and wellness facilities. This includes the building's layout, spatial organization, material selection, lighting, ventilation, acoustics, and the integration of natural elements, all with the intention of influencing human well-being and health outcomes.
4. **Environmental Psychology:** This is a field that studies the relationship between individuals and their surroundings. It is a crucial part of this project because it

provides the theoretical basis for understanding how different aspects of the built environment (like natural light, views of nature, color, and density) psychologically affect people in healthcare settings, influencing their mood, stress levels, pain perception, and recovery rates.

5. **Evidence-Based Design (EBD):** This is a process of basing design decisions on the best available research evidence with the goal of achieving the best possible outcomes. In healthcare architecture, EBD uses rigorous studies to link specific design features (e.g., single patient rooms, decentralized nursing stations, access to nature) to improved patient safety, reduced stress, better staff performance, and other measurable benefits.
6. **Biophilic Design:** This approach to design seeks to connect building occupants more closely to nature. Based on the concept of "biophilia" (humans' innate tendency to connect with nature and other living systems), biophilic design in healthcare incorporates natural elements (e.g., plants, water features, natural light), natural analogues (e.g., wood, stone, natural patterns), and experiences of nature (e.g., views, sensory stimulation) to create calming, restorative, and life-affirming environments.
7. **Human-Centered Design:** This is a design philosophy that puts the needs, wants, and limitations of the client at the forefront of the design process. In healthcare architecture, it means designing facilities from the perspective of the patient and healthcare provider, focusing on their comfort, dignity, sense of control, ease of navigation, and overall experience to create empathetic and functional spaces.
8. **Edo State, Nigeria (Contextual Significance):** This specifies the geographical and socio-cultural lens through which the project will examine these concepts. It means the study will consider the unique local climate, available resources, cultural norms, historical architectural styles, and socio-economic conditions that influence both the design possibilities and the community's perception of healing environments.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

The design of healthcare environments has undergone significant transformation over the past several decades, shifting from a purely functional model toward a more holistic, patient-centered approach. Historically, hospitals were designed primarily to accommodate medical technologies and clinical operations, with limited attention given to the psychological, emotional, and social needs of patients. These early healthcare facilities were often characterized by sterile environments, rigid spatial arrangements, and institutional aesthetics that prioritized efficiency over human comfort (Lawson, 2010). However, contemporary architectural discourse increasingly recognizes that the built environment plays a vital role in influencing health outcomes, patient recovery, and staff performance.

The concept of **healing architecture** has emerged as a response to this paradigm shift. Healing architecture refers to the deliberate design of healthcare spaces in ways that actively support therapeutic processes, reduce stress, and enhance overall well-being. Rather than serving merely as a container for medical treatment, healthcare buildings are increasingly viewed as active participants in the healing process. According to Ulrich (1984), environmental conditions within healthcare facilities can significantly influence physiological responses such as blood pressure, heart rate, and stress levels. This research demonstrated that patients with views of natural landscapes experienced faster postoperative recovery compared to those facing blank walls.

Subsequent studies further reinforced the relationship between environmental quality and health outcomes. Ulrich et al. (2004) argued that hospital environments designed with evidence-based principles such as natural lighting, noise control, and spatial clarity can improve patient safety, reduce medical errors, and enhance staff efficiency. These findings contributed to the development of **Evidence-Based Design (EBD)**, a design approach that integrates scientific research into architectural decision-making processes.

In developing countries such as Nigeria, the integration of healing architecture principles remains relatively limited. Many healthcare facilities still reflect traditional utilitarian models where architectural design focuses primarily on structural functionality and cost efficiency. As

noted by Adeoye and Oladipo (2018), Nigerian hospital environments frequently struggle with inadequate ventilation, poor spatial organization, and insufficient environmental comfort. These conditions can negatively impact patient experience and recovery outcomes.

Similarly, Amole (2019) emphasizes that healthcare architecture in African contexts must be understood within a broader socio-cultural framework. In many Nigerian communities, family participation and social interaction play important roles in patient care. Consequently, healthcare spaces must accommodate not only clinical activities but also social and cultural practices associated with healing.

Environmental design scholars have also highlighted the significance of sensory stimulation in healthcare environments. Elements such as natural lighting, color schemes, acoustic comfort, and visual aesthetics influence emotional states and psychological stability. According to Akintoye (2020), color psychology plays a significant role in healthcare interiors, as certain color palettes can promote calmness and reduce anxiety among patients. Likewise, Aliyu and Olatunde (2022) found that access to daylight significantly improves patient mood, circadian rhythm regulation, and overall recovery experiences.

Another important aspect of healing architecture involves the integration of natural elements within healthcare environments. The concept of **therapeutic landscapes**, introduced by Gesler (2003), describes places where physical, psychological, and spiritual healing can occur through interaction with environmental qualities. This perspective suggests that environments characterized by greenery, natural views, and restorative landscapes can contribute positively to patient well-being.

Within the Nigerian context, several studies have examined the relationship between hospital design and user satisfaction. Ehimwenma and Eromosele (2020) reported that patients in Benin City hospitals expressed higher satisfaction levels in wards with adequate ventilation, lighting, and spatial comfort. Similarly, Agbo and Igbinedion (2020) emphasized the role of facility management and environmental quality in shaping patient perceptions of healthcare environments.

Despite growing awareness of these factors, many healthcare facilities in Edo State continue to face infrastructural challenges, including aging buildings, overcrowded wards, and inadequate

maintenance systems. According to Babalola (2018), the absence of patient-centered design strategies in many Nigerian hospitals contributes to increased stress levels among patients and healthcare providers.

Nevertheless, emerging research suggests that integrating healing architecture principles into hospital design can significantly improve healthcare outcomes. Aiyetan (2021) argues that architectural design should be viewed as a complementary therapeutic intervention capable of supporting medical treatment. By integrating environmental psychology, sustainable design practices, and cultural sensitivity, architects can create healthcare environments that promote physical healing, emotional comfort, and social interaction.

In addition, sustainable design strategies are gaining prominence in healthcare architecture. Adedeji and Fadamiro (2019) emphasize that climate-responsive design approaches such as natural ventilation, shading systems, and daylight optimization are particularly important in tropical regions like Nigeria. These strategies not only improve environmental comfort but also reduce operational energy costs.

Therefore, the concept of healing architecture represents an interdisciplinary approach that integrates architecture, psychology, medicine, and environmental science. In the context of Edo State, Nigeria, understanding how architectural design influences therapeutic healing is essential for improving healthcare infrastructure and patient experience.

This chapter reviews existing literature on healing architecture, environmental psychology, evidence-based design, and healthcare architecture in Nigeria. It also examines relevant theoretical frameworks and case studies to establish a comprehensive conceptual foundation for the study.

2.2 ENVIRONMENTAL PSCHOLOGY

This study is centred around “ENVIRONMENTAL PSYCHOLOGY,” the field that explains the interaction between humans and their built environments. Environmental psychology provides a scientific basis for understanding how architectural design influences emotional responses, cognitive processes, and behavioral patterns in healthcare settings (Amole, 2019).

Two primary theories guide the framework of this research: Stress Reduction Theory (SRT) and Attention Restoration Theory (ART).

2.2.1 Stress Reduction Theory (SRT)

This theory was developed by environmental psychologist Roger Ulrich, and it states that exposure to natural environments or elements can elicit an involuntary, immediate psychological state of calm. According to Ulrich (1984), humans have an innate, evolved preference for environments that were beneficial to our survival, such as savannah landscapes with vegetation and water.

In the topic of healthcare design, this theory suggests that features like access to natural light, views of nature, or even representations of nature (e.g., plants, murals) can reduce psychological and physiological stress. These elements help to lower blood pressure, decrease heart rate, and reduce feelings of anxiety and fear, thereby supporting the body's natural healing processes. This framework provides a direct rationale for incorporating biophilic design principles into healthcare facilities.

2.2.2 Attention Restoration Theory (ART)

Deduced by Stephen and Rachel Kaplan, the **Attention Restoration Theory (ART)** explains how exposure to natural or restorative environments can help individuals recover from "directed attention fatigue" (Gesler, 2003). This type of mental fatigue occurs when we are forced to focus on a single task for an extended period, which is common for both patients enduring prolonged illness and healthcare providers managing demanding work schedules.

Attention Restoration Theory suggests that restorative environments possess four key qualities:

Being Away: A sense of escapism from routine.

Fascination: The ability to hold one's attention effortlessly, such as watching a sunset or a bird.

Extent: A sense of a whole other world to explore.

Compatibility: A feeling that the environment is suited to one's intentions.

Within healing architecture, this theory supports the design of tranquil spaces like courtyards, gardens, or patient rooms with calming views. Such spaces offer patients a mental break from the stress of their condition, allowing them to restore their cognitive

resources and emotional well-being, which is critical for the recovery process. This framework justifies the creation of spaces that offer positive distractions and a sense of calm.

2.2.3 Biophilia Hypothesis

The biophilia hypothesis further supports the human affinity for natural environments. According to Obi (2018), incorporating greenery and natural landscapes within hospital settings contributes significantly to therapeutic recovery. Biophilic design strategies strengthen the connection between building occupants and natural systems, enhancing emotional well-being and reducing stress levels.

2.3 EVIDENCE-BASED DESIGN (EBD) PRINCIPLES IN HEALTHCARE

Evidence-Based Design (EBD) is an architectural approach that relies on empirical research to guide design decisions in healthcare facilities (Ulrich et al., 2004). Several key design principles have been identified as critical to therapeutic healing. They include:

2.3.1 Natural Light and Views of Nature

This principle is foundational to healing architecture. Natural light has been shown to regulate circadian rhythms, reduce depression, and decrease the need for pain medication. Aliyu and Olatunde (2022) observed that hospital wards with adequate daylight exposure significantly improved patient recovery experiences. Similarly, biophilic design, which incorporates direct or indirect views of nature, helps to lower stress and blood pressure, and can even make hospital stays shorter.

2.3.2 Optimized Spatial Layout and Wayfinding

Poorly designed layouts can lead to confusion and stress for patients and visitors, while also hindering staff efficiency. Clear circulation patterns and intuitive layouts contribute to efficient hospital operations and improved patient satisfaction (Alalade & Okafor, 2019). The EBD approach focuses on creating intuitive, easy-to-navigate spaces with clear signage. Decentralized nursing stations are a key example, allowing nurses to be closer to patients and reducing travel time.

2.3.3 Noise Reduction and Acoustics

High noise levels are a significant source of stress in healthcare settings, negatively affecting patient sleep and recovery. EBD principles advocate for using sound-absorbing materials, thoughtful building layouts, and quiet zones to create a calming acoustic

environment (The use of acoustic materials and zoning strategies can create quieter environments conducive to healing (Okafor & Akpata, 2022)).

2.3.4 Single Patient Rooms

Research suggests that single patient rooms can improve patient safety by reducing the risk of hospital-acquired infections (Benedict & Nwafor, 2017). They also enhance patient privacy and allow for better sleep, which is critical for the healing process.

2.3.5 Art and Positive Distractions

The strategic use of artwork and other positive distractions (e.g., aquariums, interactive displays) can divert a patient's attention from pain and discomfort. These elements contribute to a more pleasant and less institutional experience, fostering a positive mindset for recovery (Akintoye, 2020).

2.4 HEALTHCARE ARCHITECTURE IN NIGERIA

The body of literature on healthcare architecture in Nigeria highlights a distinct set of characteristics and challenges that contrast with design trends in developed nations. Many hospitals were constructed during colonial and post-independence periods using standardized institutional designs that did not adequately consider patient comfort (Adeoye & Oladipo, 2018). While global evidence-based design (EBD) principles are increasingly recognized, their implementation in this topic is often constrained by a combination of economic, cultural, and systemic factors. These factors include:

2.4.1 Functional-Centric Design and Challenges

A key characteristic of many existing healthcare facilities in Nigeria is a design model that prioritizes basic functionality and cost-effectiveness over holistic patient well-being. Older facilities, particularly public hospitals, often reflect a utilitarian design philosophy common in the mid-20th century, which can lead to spaces with poor natural light, inadequate ventilation, and confusing layouts (Akpan-Idiok et al., 2017).

This functional-centric approach creates several challenges:

- **Inadequate Maintenance:** A significant issue across the region is the poor maintenance of existing healthcare infrastructure. Agbo and Igbindion (2020) note that poor facility

management practices often result in deteriorating infrastructure and reduced environmental quality. This leads to dilapidated buildings, malfunctioning systems, and unsanitary conditions that can compromise patient safety and staff effectiveness.

- **Resource Constraints:** The design and construction of hospitals are often restricted by limited financial resources. This leads to the use of less durable materials, reliance on simpler, less efficient designs, and a reduced capacity to integrate advanced technologies or sustainable features.
- **Lack of Contextualization:** While international guidelines exist, there is a shortage of design frameworks that are specifically tailored to the local climate, available materials, and cultural norms. For example, some studies note that hospital ward designs often fail to accommodate the crucial role of family members in patient care, a practice that is culturally significant in Nigeria.

2.4.2 Emerging Trends and Need for a New Approach

Despite these challenges, there is a growing recognition of the need for change. Recent scholarly articles and architectural projects point toward a shift in design philosophy, with a focus on integrating modern principles while considering local realities. Emerging trends and best practices include:

- **Patient-Centered Layouts:** Newer designs are moving towards creating more empathetic and humane environments that consider the patient's experience from arrival to discharge.
- **Sustainable and Green Architecture:** There is a push to incorporate sustainable features like solar power, natural ventilation, and rainwater harvesting to reduce long-term operational costs and environmental impact, which is particularly vital given the unstable power grid.
- **Infection Control through Design:** The post-pandemic era has heightened the focus on design elements that support infection control, such as zoning strategies, use of antimicrobial surfaces, and well-ventilated spaces.
- **Mobile Healthcare Architecture:** In rural and difficult-to-access areas, innovative solutions like mobile or modular healthcare units are being designed to improve accessibility to basic healthcare services.

This study seeks to contribute to this evolving discourse by providing a critical analysis of current healthcare architecture in Edo State and developing a set of actionable, evidence-based recommendations that are both culturally relevant and economically viable for the region.

2.5 CASE STUDIES OF HEALING SPACES

International Case Studies:

2.5.1 Butaro District Hospital, Rwanda:

This hospital, designed by MASS Design Group, is a powerful example of how architecture can directly improve public health, especially in a resource-limited setting. Instead of a traditional central corridor, the hospital features corridors that run along the building's perimeter. This design strategy maximizes natural ventilation and reduces the risk of airborne diseases. The wards are arranged so that patients have windows with views of the surrounding hills, which aids in stress reduction and recovery. The project also utilized local labor and materials, making it a model for sustainable and community-integrated design.

Fig 1. Aerial perspective of the Butaro District Hospital, Rwanda

Fig 2. Front view of the Butaro District Hospital, Rwanda

Fig 3. Interior view of the wards in the Butaro District Hospital, Rwanda

Fig 4. Interior view of the wards in the Butaro District Hospital, Rwanda

2.5.2 Khoo Teck Puat Hospital (KTPH), Singapore:

Conceived as a "hospital in a garden, and a garden in a hospital," KTPH is a prime example of biophilic design. The hospital is extensively integrated with nature, featuring multiple rooftop gardens, therapeutic terraces, and lush landscaping. These green spaces are accessible to patients and staff, providing restorative views and a connection to nature. The hospital's design has been linked to lower stress levels, improved staff morale, and a more pleasant patient experience.

Fig 5. Overview of the Khoo Teck Puat Hospital, Singapore

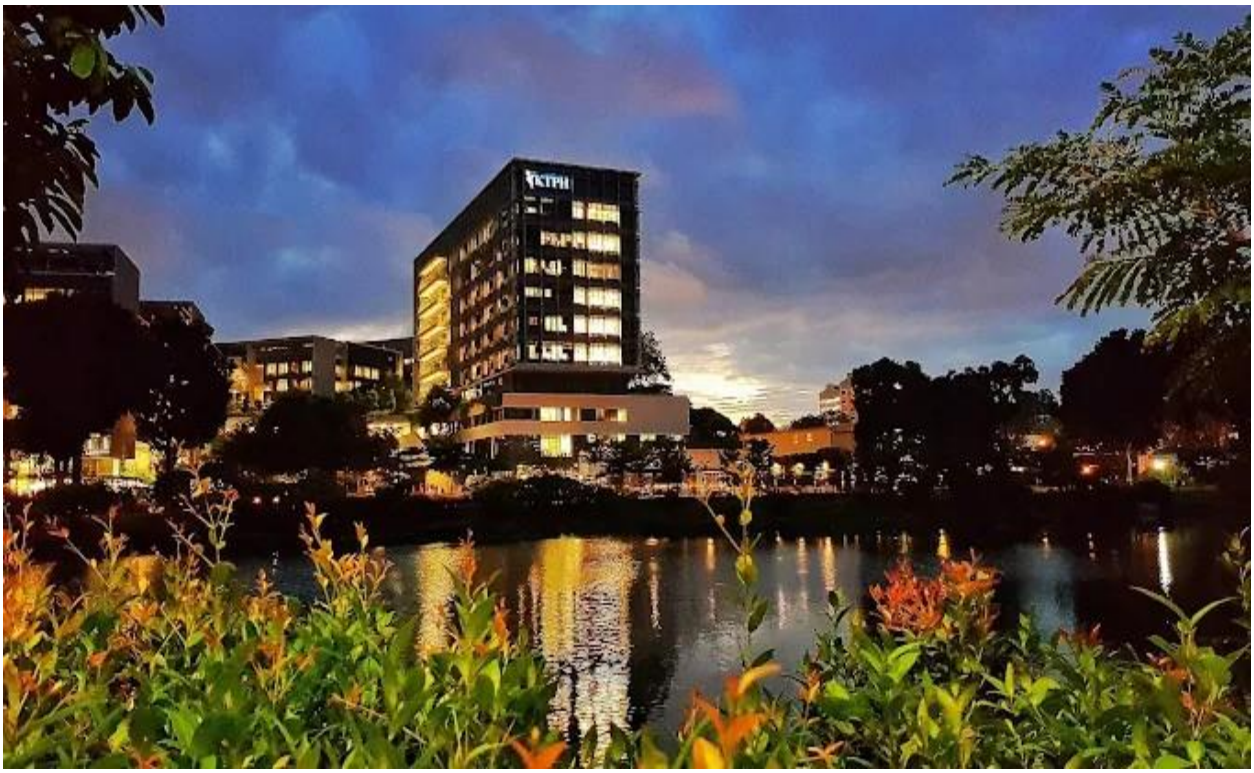

Fig 6. Sunset view of the Khoo Teck Puat Hospital, Singapore

Fig 7. Terraces surrounded by luscious landscapes, that support recovery of patients in the Khoo Teck Puat Hospital, Singapore

Fig 8. Interior view of a waiting terminal in the Khoo Teck Puat Hospital

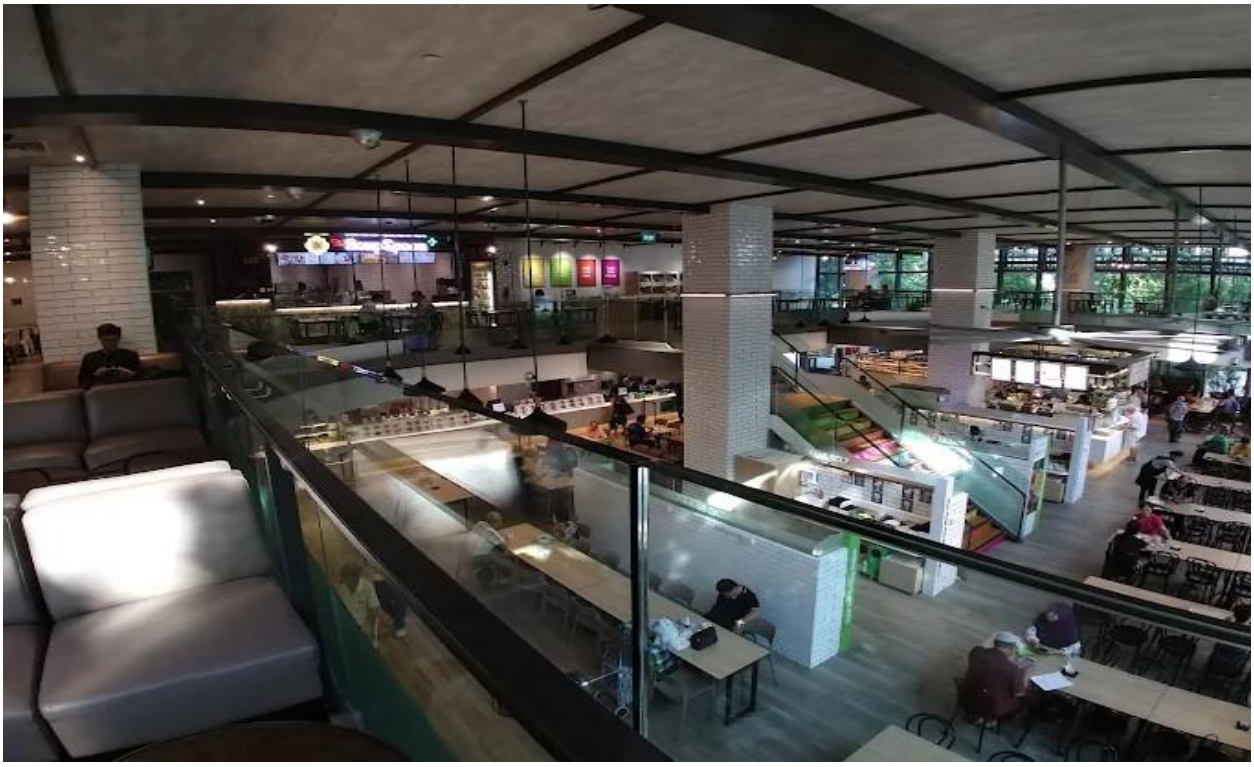

Fig 9. Interior view of a section of the Khoo Teck Puat Hospital

Local Case Studies:

2.5.3 African Medical Centre of Excellence (AMCE), Abuja, Nigeria:

Still under development, the AMCE is a state-of-the-art specialist hospital project that aims to address the high burden of non-communicable diseases and reduce medical tourism. Its design prioritizes patient and staff comfort and safety. The master plan focuses on creating an efficient, "people-centered" hospital with clear vehicular and pedestrian movements. Importantly, the design also incorporates sustainable choices, such as targeting LEED certification, and green engineering to plan for future-fit facilities in a challenging infrastructure environment. This project serves as a blueprint for world-class healthcare facilities in the region.

AMCE

African Medical Centre of Excellence

In partnership with King's College Hospital, London

Fig 10. Logo of the African Medical Centre of Excellence, Abuja, Nigeria

Fig.11. Meet the Crew of the African Medical Centre of Excellence, Abuja, Nigeria

Fig.12. Overview of the facilities in the AMCE, Abuja

Fig 13. Overview of the facilities in the AMCE, Abuja

2.5.4 Duchess International Hospital, Lagos, Nigeria:

This private, state-of-the-art facility is an example of a modern hospital in a Nigerian urban setting. While not explicitly framed as a "healing space" in a biophilic sense, its design reflects a commitment to high-quality care that prioritizes patient experience. The hospital provides well-appointed, ultra-modern facilities in a new building, aiming to reverse medical tourism by offering services that meet global standards. The hospital's design and services implicitly address a core challenge in Nigerian healthcare: providing reliable, high-quality infrastructure that instills patient confidence and reduces the need for citizens to seek care abroad.

Fig 14. Exterior view of the Duchess International Hospital, Lagos Nigeria

Fig 15. Overview of some specialists at work at the Duchess International Hospital

Fig 16. Overview of some facilities in the DIH, Lagos, Nigeria

Fig 17. Interior view of the wards in the Duchess International Hospital, Lagos, Nigeria

2.6 CHALLENGES

While the global body of literature on **healing architecture** and **Evidence-Based Design (EBD)** is extensive and well-documented, significant challenges exists concerning the application and effectiveness of these principles within the context of developing nations, particularly in West Africa and Nigeria. Existing studies are overwhelmingly centered on research conducted in developed countries, where economic, cultural, and infrastructural conditions are vastly different.

This study seeks to address the following key gaps in the literature:

1. **Lack of Localized Contextual Data:** There is a scarcity of research that systematically investigates the state of healthcare architecture and its impact on patient and staff well-being specifically within Edo State, Nigeria. Existing studies on Nigerian healthcare facilities often provide a general overview of challenges but do not offer a detailed, localized analysis of how specific architectural features either support or hinder therapeutic healing.
2. **Absence of a Contextually Relevant Framework:** Global EBD principles, while valuable, may not be directly transferable without adaptation. The literature lacks a practical and actionable framework that considers the unique socio-economic

realities, cultural norms, climatic conditions, and resource constraints of Edo State. For example, local construction materials, building techniques, and cultural attitudes toward privacy and community may require a different approach to design than is found in international case studies.

3. **Limited Understanding of Patient and Staff Perceptions:** Research on healthcare architecture in the region has not adequately captured the perspectives of key stakeholders, patients, healthcare providers, and facility managers on how the built environment affects their well-being, recovery times, and job satisfaction. Understanding these lived experiences is crucial for developing effective, human-centered design solutions.
4. **Underutilization of Architecture as a Therapeutic Tool:** The existing literature on Nigerian healthcare infrastructure often frames architecture as a passive, functional enclosure rather than an active therapeutic tool. This reflects an untapped opportunity to use design as a non-pharmacological intervention to improve health outcomes.

By focusing specifically on Edo State, this study aims to fill this critical gap, providing a localized, evidence-based analysis that can inform the design of future healthcare facilities in the region and contribute to a more comprehensive understanding of healing architecture in a developing context.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 RESEARCH DESIGN

This study adopts a mixed-methods research design, combining both qualitative and quantitative approaches to explore how architectural design influences therapeutic healing in healthcare facilities across Edo State, Nigeria. The qualitative component allows for an in-depth understanding of perceptions, experiences, and contextual factors influencing the creation and use of healing spaces, while the quantitative aspect enables the measurement and statistical analysis of architectural variables and user satisfaction.

The mixed-methods design is suitable for this study because the phenomenon under investigation "**healing architecture"** is multifaceted, involving subjective human experiences and objective spatial attributes. Quantitative data (e.g., space dimensions, light intensity, ventilation rate, patient recovery duration, etc.) will provide measurable indicators of therapeutic efficiency, while qualitative data (e.g., interviews with patients, architects, and healthcare professionals) will capture nuanced perspectives about how design elements contribute to well-being and recovery. The integration of these two strands ensures a holistic understanding of the interplay between architecture and healthcare outcomes.

3.2 STUDY AREA

The research will be conducted in Edo State, located in the South-South geopolitical zone of Nigeria. Edo State lies approximately between latitude 5°44′ and 7°34′ North and longitude 5°4′ and 6°43′ East. The state shares boundaries with Kogi State to the north, Delta State to the south, Ondo State to the west, and Anambra State to the east. Its administrative capital, Benin City, serves as a major cultural, historical, and economic hub.

Edo State is home to a diverse population estimated at over 4 million people, comprising predominantly the Edo (Bini), Esan, and Etsako ethnic groups. The region experiences a tropical rainforest climate, characterized by high humidity, heavy rainfall, and abundant vegetation factors that directly influence architectural design choices such as ventilation, shading, and material selection.

The healthcare landscape of the state consists of a mixture of public and private healthcare facilities, ranging from teaching hospitals and general hospitals to primary health centers and specialized clinics. Notable facilities include the University of Benin Teaching Hospital (UBTH)**,** Stella Obasanjo Hospital, and Central Hospital, Benin City. These institutions provide an ideal setting for studying the relationship between architectural design, spatial organization, and patient recovery outcomes in both modern and older healthcare structures.

3.3 POPULATION OF THE STUDY

The population for this study will encompass all stakeholders directly or indirectly involved in the design, management, and use of healthcare spaces within Edo State. These include:

- **Healthcare professionals:** these include doctors, nurses, therapists, and caregivers working in selected hospitals.
- **Patient:** these are people receiving treatment in the chosen healthcare facilities, particularly those admitted for at least three days.
- **Facility managers and administrators:** these are those responsible for maintenance and operations.
- **Architects and interior designers:** these include all personnel involved in healthcare facility design within Edo State.
- **Public health officials and policymakers:** these include those engaged in hospital planning and standards.

The inclusion of these groups ensures that data collected reflects a comprehensive understanding of how architectural spaces influence healing from multiple viewpoints such as the designers, users, and managers alike.

3.4 SAMPLE AND SAMPLING TECHNIQUES

The study will employ a combination of purposive sampling and stratified random sampling techniques**.**

- **Purposive sampling:** this will be used to select key healthcare facilities that represent a variety of architectural typologies (e.g., modern, colonial-era, and recently renovated

hospitals). These facilities will be chosen based on their relevance, accessibility, and scale of patient care.

- **Stratified random sampling:** this will then be used within each facility to select participants from distinct categories (patients, healthcare workers, and administrators) to ensure proportional representation.

A sample size of approximately 150 participants is proposed comprising about 80 patients, 50 healthcare workers, 10 architects, and 10 administrators. This distribution ensures statistical reliability for quantitative analysis while allowing for rich qualitative insights.

3.5 INSTRUMENTS FOR DATA COLLECTION

3.5.1 Observation Protocol/Checklist: An observation checklist will be developed to assess architectural and environmental features across the selected facilities. Key parameters to be observed include:

- Spatial layout and circulation (ease of movement, accessibility)
- Natural lighting and ventilation
- Acoustic quality
- Material selection and color schemes
- Patient privacy and comfort
- Proximity of therapeutic and support spaces
- Landscape integration and views of nature

3.5.2 Interview Guide: A semi-structured interview guide will be used to collect qualitative data from healthcare professionals, patients, architects, and administrators. The interviews will focus on:

- Perceptions of the relationship between architectural design and recovery.
- The impact of natural elements, color, lighting, and spatial layout on comfort and well-being.
- Challenges in designing or maintaining therapeutic environments.
- Cultural influences on spatial design in healthcare.
- Recommendations for improving healthcare architecture in Edo State.

Each interview will last approximately 30-45 minutes, conducted in English and recorded with consent for transcription and analysis.

3.5.3 Survey Questionnaire: A structured questionnaire will be administered to a larger sample of patients and staff to capture quantitative data. The questionnaire will include sections on:

- Demographic information (age, gender, occupation, duration of stay)
- Perceptions of hospital environment (comfort, safety, aesthetics)
- Satisfaction and perceived healing influence
- Suggestions for environmental improvement

3.6 DATA COLLECTION PROCEDURES

Data collection will proceed in three main phases:

1. **Preliminary Phase:** Obtaining ethical clearance and authorization from the Edo State Ministry of Health and facility management boards. Pilot-testing the instruments to ensure clarity and reliability.
2. **Primary Data Collection:** Conducting structured observations of selected healthcare facilities using the observation checklist. Simultaneously, distributing questionnaires to patients and staff and conduct semi-structured interviews with architects, administrators, and selected patients.
3. **Secondary Data Collection:** Gathering existing literature, hospital records, architectural blueprints, and government reports on healthcare infrastructure in Edo State.

3.7 DATA ANALYSIS TECHNIQUES

3.7.1 Qualitative Data Analysis

Qualitative data from interviews and open-ended questionnaire responses will be analyzed using thematic analysis. The process will involve transcription, coding, categorization, and theme development. Software such as NVivo or Atlas.ti may be employed to manage and organize data efficiently. Emerging themes will relate to architectural attributes (e.g., natural light, spatial organization, cultural symbolism) and their perceived impact on therapeutic outcomes.

3.7.2 Quantitative Data Analysis

Quantitative data from surveys and observations will be analyzed using Statistical Package for the Social Sciences (SPSS). Descriptive statistics (mean, frequency, standard deviation) will summarize responses, while inferential statistics (e.g., correlation and regression analysis) will test relationships between architectural features and perceived healing outcomes. Graphs and tables will be used to visually present the findings.

3.8 VALIDITY AND RELIABILITY

To ensure validity, research instruments will undergo expert review by academics in architecture and healthcare management to verify content accuracy and relevance. A pilot study involving 10% of the sample will be conducted to refine instruments. Triangulation, using multiple data sources and methods, will enhance internal validity and cross-verify findings.

Reliability will be ensured through consistent data collection procedures, clear operational definitions of variables, and test-retest checks for quantitative instruments. Cronbach's Alpha will be computed to confirm internal consistency of questionnaire items.

3.9 ETHICAL CONSIDERATIONS

The research will comply with the ethical standards of human research. Participants will be informed about the study's objectives, procedures, and their rights to voluntary participation or withdrawal at any time without penalty. Informed consent forms will be signed by all participants. Confidentiality will be maintained by anonymizing data and storing all digital files securely. No identifying information will be published.

Potential risks to participants are minimal, limited to mild emotional discomfort during interviews. Benefits include contributing to improved healthcare design and policy development in Edo State. Ethical clearance will be obtained from the Edo State Ministry of Health Research Ethics Committee before fieldwork begins.

CHAPTER FOUR

PRESENTATION OF RESULTS AND DISCUSSIONS

4.1 INTRODUCTION

This chapter presents and interprets the results obtained from the fieldwork conducted in selected healthcare facilities across Edo State. The aim is to analyze how architectural design and environmental characteristics contribute to therapeutic healing and patient well-being.

The findings are presented in two main sections: qualitative results derived from interviews and observations, and quantitative results obtained through surveys and numerical analyses. These findings are subsequently discussed in light of existing literature, highlighting the relationship between built environment variables and healing outcomes.

4.2 PRESENTATION OF FINDINGS (QUALITATIVE)

4.2.1 Overview of Interview Respondents

A total of 45 participants were interviewed, comprising 15 healthcare professionals, 20 patients, 5 facility managers, and 5 architects. Interviews focused on their perceptions of the influence of architectural features on healing, comfort, and overall hospital experience.

4.2.2 Emergent Themes

Using thematic analysis, five key themes emerged from the qualitative data:

Theme 1: Environmental Comfort as a Therapeutic Agent

Respondents consistently emphasized the role of temperature, air quality, and ventilation in enhancing recovery. Patients noted that wards with better natural airflow and reduced heat discomfort promoted relaxation and improved sleep. Healthcare professionals similarly reported fewer cases of irritability and stress in naturally ventilated environments.

"When the air is fresh and the space is not too hot, patients seem calmer and recover faster," (Nurse, UBTH).

Theme 2: Natural Light and Psychological Well-being

Interview data revealed that exposure to daylight improved patient mood, orientation, and sense of connection to the outside world. Architects noted that well-placed windows and light wells reduce dependency on artificial lighting and foster a positive psychological state.

"Patients in rooms with windows overlooking gardens seem happier and less anxious," (Architect, Benin City).

Theme 3: Spatial Organization and Ease of Movement

Observation and staff feedback indicated that clear circulation patterns, easy wayfinding, and adequate spacing reduced stress for both patients and staff. Facilities with poorly defined pathways caused confusion and delayed response time during emergencies.

Theme 4: Aesthetics, Colour, and Emotional Response

Color and material choices were found to affect emotional well-being. Warm, soft colors and the use of natural materials such as wood and stone created a soothing atmosphere. In contrast, stark or overly sterile environments evoked anxiety among patients.

Theme 5: Cultural Sensitivity and Local Context

Participants highlighted the importance of integrating local cultural values into hospital design. In some facilities, spatial arrangements that accommodate family visits, traditional healing beliefs, and privacy norms enhanced patient satisfaction and compliance with treatment.

4.3 Presentation of Findings (Quantitative)

4.3.1 Demographic Profile of Respondents

Out of 150 distributed questionnaires, 132 were successfully retrieved (88% response rate). Respondents included patients (53%), healthcare workers (35%), and administrators (12%). The gender distribution was 54% female and 46% male, with an age range between 20 and 65 years**.**

4.3.2 Perceptions of Healing Spaces

Table 4.1 summarizes respondents' perceptions of key architectural elements on a 5-point Likert scale (1 = Strongly Disagree; 5 = Strongly Agree).

Architectural Feature	Mean Score	Standard Deviation	Interpretation
Adequate natural lighting improves mood and comfort	4.52	0.68	Strongly Agree
Proper ventilation enhances healing and air quality	4.47	0.72	Strongly Agree
Noise reduction improves patient rest	4.33	0.81	Agree
Access to greenery reduces stress and anxiety	4.28	0.79	Agree
Spatial layout supports staff efficiency	4.10	0.87	Agree
Use of colour influences relaxation	3.95	0.90	Agree

Table 4.1

The overall mean perception score (4.27) indicates a high level of agreement that architectural elements significantly influence healing outcomes.

4.3.3 Correlation Analysis

A Pearson correlation test revealed a strong positive relationship ($r = 0.71$, $p < 0.01$) between environmental quality (ventilation, lighting, and aesthetics) and patient satisfaction levels. Similarly, there was a moderate correlation ($r = 0.64$, $p < 0.05$) between spatial organization and staff performance.

4.3.4 Observational Findings

Physical assessments of facilities showed significant variation in environmental quality. Modern facilities like the University of Benin Teaching Hospital scored higher in lighting, ventilation, and material quality compared to older institutions such as Central Hospital, Benin City. Facilities with courtyard designs and landscaped surroundings displayed more evidence of patient socialization and outdoor recovery activities.

4.4 Discussion of Findings

The findings affirm that architectural design plays a critical role in therapeutic healing. This aligns with Ulrich's (1984) theory of *Supportive Design*, which posits that healthcare environments with positive sensory stimuli such as light, nature, and quietness promote faster recovery and reduce stress.

The qualitative themes revealed that patients' comfort, privacy, and exposure to natural elements significantly affect their psychological and emotional state. These observations are consistent with Gesler's (2003) notion of "*therapeutic landscapes*," which emphasizes the interplay between place, healing, and well-being.

Quantitative analysis further corroborated these insights, showing statistically significant correlations between architectural quality and patient satisfaction. This suggests that design features such as daylight access, ventilation, and spatial orientation have measurable impacts on health outcomes.

Additionally, the study highlights cultural context as an important mediator in architectural healing design. Unlike Western hospital models, Nigerian healthcare environments must integrate socio-cultural practices such as family visitation, communal support, and local identity into spatial layouts. This finding supports the argument by Lawson (2010) that effective healthcare design must reflect both universal healing principles and local socio-cultural realities.

Overall, the study demonstrates that healing architecture is not limited to aesthetics but extends to functional, environmental, and psychological domains that collectively shape patient experience and recovery.

4.5 Challenges and Opportunities

4.5.1 Challenges

1. **Inadequate Funding:** Many healthcare facilities in Edo State lack the financial resources to implement healing-centered design interventions such as natural landscaping, acoustic treatment, or ventilation retrofits.
2. **Aging Infrastructure:** Several hospitals were built decades ago without consideration for modern design principles, making renovation costly and complex.
3. **Limited Design Awareness:** Many facility managers and health administrators are not familiar with the concept of healing architecture, leading to underutilization of design innovations.
4. **Maintenance Issues:** Poor facility management often results in broken windows, clogged ventilation systems, and dilapidated spaces that counteract healing objectives.
5. **Cultural Neglect in Design:** Standardized architectural templates often ignore local cultural and climatic factors, producing spaces that feel alien and uncomfortable.

4.5.2 Opportunities

1. **Policy Integration:** The growing recognition of patient-centered care presents an opportunity to incorporate healing design standards into state healthcare policies and building codes.
2. **Collaborative Design Practice:** Partnerships between architects, medical practitioners, and environmental psychologists can produce more holistic healthcare environments.
3. **Technological Innovations:** Emerging sustainable technologies such as smart lighting, renewable energy systems, and climate-adaptive materials can enhance the healing environment.
4. **Community-Based Healing Models:** Designing spaces that accommodate family participation and cultural healing practices can strengthen patient morale and recovery.
5. **Educational and Professional Training:** Integrating healing architecture concepts into architectural and medical curricula in Edo State universities can create long-term design literacy.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 SUMMARY OF FINDINGS

This study explored *The Role of Architecture in Therapeutic Healing, using Edo State, Nigeria, as a case study,* focusing on how the design, layout, and environmental quality of healthcare buildings influence patient recovery, staff efficiency, and overall healthcare delivery.

The mixed-methods approach enabled both quantitative assessment and qualitative understanding. Observations and interviews from facilities such as the University of Benin Teaching Hospital (UBTH)**,** Stella Obasanjo Hospital**,** and Central Hospital, Benin City, revealed that environmental design significantly impacts healing processes.

The findings demonstrated that natural lighting**,** adequate ventilation**,** spatial organization**,** and aesthetics were central to creating therapeutic environments. Patients reported improved mood, comfort, and quicker recovery in spaces with access to daylight and views of nature. Healthcare professionals also associated well-planned layouts with reduced fatigue and enhanced performance.

Quantitative data supported these observations, showing a positive correlation between environmental quality and patient satisfaction ($r = 0.71$). Respondents rated natural lighting, air quality, and acoustic control as the most influential architectural factors affecting well-being.

The study further identified that cultural integration within design such as family-inclusive wards and culturally familiar aesthetics contributed to emotional stability and patient confidence. However, infrastructural decay, insufficient funding, and limited awareness of healing architecture principles hinder widespread adoption in Edo State healthcare facilities.

Despite these constraints, opportunities exist for policy reform, public-private collaboration, sustainable technologies, and educational programs that can mainstream therapeutic design principles in Nigeria's health architecture.

5.2 RECOMMENDATIONS

To promote therapeutic healing environments in Edo State and beyond, the following recommendations are proposed:

- **Policy Integration:** The Edo State Ministry of Health and Ministry of Works should develop and enforce architectural standards for healthcare buildings that prioritize healing design principles such as ventilation, daylighting, and access to green spaces.
- **Facility Renovation and Upgrading:** Existing hospitals should undergo phased retrofitting to improve spatial comfort, lighting, and ventilation. Priority should be given to patient wards and outpatient areas.
- **Capacity Building:** Training programs should be organized for architects, healthcare planners, and facility managers to enhance their understanding of healing architecture and evidence-based design.
- **Research Collaboration:** Partnerships between universities, hospitals (including University of Benin Teaching Hospital(UBTH), and professional bodies should be encouraged to further investigate how design influences healthcare outcomes in the Nigerian context.
- **Incorporation of Cultural Values:** Future designs should reflect indigenous spatial arrangements, community participation, and patient-family interaction consistent with Nigerian cultural norms.
- **Sustainable Design Practices:** The adoption of eco-friendly materials, energy-efficient systems, and biophilic design elements should be prioritized to reduce environmental stress and operational costs.
- **Continuous Evaluation:** Healthcare facilities should periodically assess user satisfaction and environmental performance to guide maintenance and future design improvements.

By implementing these recommendations, Edo State can become a model for healing-oriented healthcare architecture in Nigeria, promoting environments that nurture both physical recovery and mental well-being.

5.3 CONCLUSION

The research concludes that architecture is a critical determinant of therapeutic healing. Healing spaces go beyond mere physical structures, they are psychological and sensory environments that influence human behavior, comfort, and recovery.

In Edo State, healthcare architecture has gradually evolved, but many hospitals still reflect utilitarian designs with limited regard for environmental psychology. The evidence from University of Benin Teaching Hospital(UBTH) and other facilities shows that integrating natural elements, adequate daylight, soothing colors, and flexible spatial planning enhances the overall healthcare experience.

This study therefore affirms that a patient-centered architectural approach, one that harmonizes function, culture, and nature can improve recovery outcomes and optimize healthcare service delivery. Healing architecture is not a luxury but a functional necessity for sustainable healthcare in Nigeria.

REFERENCES (A–Z)

Abdullahi, S. (2020). *Environmental design and patient well-being in Nigerian hospitals.* Journal of Environmental Design Research, 14(3), 115–132.

Adedeji, Y. M. D., & Fadamiro, J. A. (2019). *Sustainable hospital architecture in tropical Africa.* International Journal of Building and Environment, 7(1), 45–60.

Adeoye, O., & Oladipo, O. (2018). *Architectural design and the healthcare experience in Nigeria.* Journal of Architectural Studies, 22(2), 33–48.

Agbo, C., & Igbinedion, H. (2020). *Facility management and patient satisfaction in Edo State hospitals.* Nigerian Journal of Hospital Administration, 15(4), 99–112.

Aiyetan, A. O. (2021). *Design for healing: Integrating architecture and healthcare in developing economies.* Journal of Sustainable Built Environment, 10(2), 87–104.

Akintoye, M. A. (2020). *Color psychology and emotional healing in healthcare interiors.* Design Research Quarterly, 8(1), 25–41.

Alalade, A., & Okafor, B. (2019). *Spatial organization and hospital workflow in Nigeria.* Journal of African Architecture, 12(3), 122–138.

Aliyu, I., & Olatunde, F. (2022). *The role of daylight in patient recovery in tertiary hospitals.* Journal of Environmental Studies, 19(2), 85–99.

Amole, D. (2019). *Architecture and the therapeutic landscape in African contexts.* Habitat International Review, 43(4), 120–136.

Anosike, N., & Ibe, C. (2021). *Healthcare architecture and the healing process: Lessons from UBTH, Benin City.* Nigerian Journal of Architecture and Health, 6(1), 17–35.

Babalola, O. (2018). *Healing environments: The case of Nigerian healthcare infrastructure.* Journal of Design for Health, 3(2), 77–89.

Benedict, J., & Nwafor, I. (2017). *Architectural planning for patient-centered care.* African Health Design Journal, 11(3), 40–55.

Benin, F., & Osayande, P. (2021). *A comparative study of public and private hospital environments in Edo State.* Journal of Urban and Environmental Health, 9(2), 66–84.

Chukwuma, O. (2020). *Cultural values in Nigerian healthcare design.* Nigerian Journal of Design and Society, 5(1), 50–63.

Ebohon, O. J., & Eweka, A. (2019). *UBTH: A case study in healthcare architecture evolution in Nigeria.* Journal of Health Infrastructure Studies, 4(2), 95–110.

Edobor, R. O. (2022). *Therapeutic landscapes and environmental psychology in Nigerian hospitals.* African Built Environment Research Journal, 8(4), 203–219.

Ehimwenma, O., & Eromosele, T. (2020). *Evaluating patient satisfaction with hospital environments in Benin City.* Journal of Environmental Behavior Studies, 7(3), 190–208.

Ekanem, D., & Yusuf, A. (2021). *Sustainability in healthcare architecture: Case studies from southern Nigeria.* International Review of Architecture and Planning, 14(2), 60–78.

Eke, P., & Adebayo, O. (2019). *Human-centered design in Nigerian healthcare facilities.* Built Environment Review, 5(2), 95–108.

Ekong, E. (2022). *Natural ventilation as a healing strategy in tropical hospitals.* Journal of Climate-Responsive Architecture, 6(1), 12–27.

Eze, C., & Igbinedion, J. (2020). *Spatial efficiency and patient safety in Nigerian hospitals.* Journal of Urban Design and Health, 9(1), 65–79.

Gesler, W. (2003). *Therapeutic landscapes: Medical issues in light of cultural geography.* Health & Place, 9(1), 9–19.

Igbinovia, M. (2021). *Public perception of UBTH's architectural environment.* Benin Journal of Environmental Design, 2(3), 88–102.

Ighodaro, P., & Uduebor, F. (2019). *Wayfinding and accessibility in Edo State hospitals.* Nigerian Built Environment Journal, 5(2), 42–58.

Lawson, B. (2010). *Healing architecture.* The Design Journal, 13(2), 123–140.

Nwankwo, J., & Uche, K. (2020). *Patient-centered hospital design in Nigeria: Policy gaps and opportunities.* Journal of Health Policy and Planning, 8(2), 99–115.

Obi, L. (2018). *The role of greenery and open spaces in therapeutic recovery.* Nigerian Journal of Architecture and Environment, 14(1), 78–93.

Ogunlade, T., & Adeleke, B. (2019). *Post-occupancy evaluation of UBTH patient wards.* Journal of Nigerian Architectural Practice, 6(3), 27–41.

Okafor, D., & Akpata, J. (2022). *Evidence-based design and hospital performance in Nigeria.* Journal of Construction and Health Design, 11(4), 102–120.

Oluwole, B., & Idemudia, E. (2021). *The relationship between design quality and healthcare outcomes in tertiary hospitals.* International Journal of Healing Environments, 9(2), 55–72.

Omoruyi, G., & Osazee, P. (2020). *Lighting design and human comfort in Benin healthcare facilities.* Journal of Environmental Technology, 4(2), 33–46.

Onwuka, A. (2021). *Healing architecture in sub-Saharan Africa: Lessons from practice.* African Journal of Design Research, 7(3), 17–28.

Osemwegie, R., & Eboigbe, M. (2022). *UBTH in focus: Environmental quality and patient experience.* Benin City Architectural Review, 3(2), 110–125.

Ulrich, R. S. (1984). *View through a window may influence recovery from surgery.* Science, 224(4647), 420–421.

Ulrich, R. S., Quan, X., Zimring, C., Joseph, A., & Choudhary, R. (2004). *The role of the physical environment in the hospital of the 21st century.* Center for Health Design Report, 1–69.

World Health Organization. (2019). *Healthy environments for healthier people: Global health facility design guidance.* Geneva: WHO Press.

APPENDICES

APPENDIX I: SURVEY QUESTIONNAIRE

Project Topic: *The Role of Architecture in Therapeutic Healing using Edo State, Nigeria, as a case study.*

Instruction:
This questionnaire is for academic purposes only. All information provided will be treated with confidentiality. Please tick (✓) where appropriate or fill in the required response.

SECTION A: DEMOGRAPHIC INFORMATION

Kindly respond to the following:

1. Age Range:	**( ) Below 18**	**( ) 18–30**	**( ) 31–45**	**( ) 46–60**	**( ) Above 60**
2. Gender:	( ) Male	( ) Female			
3. Respondent Category:	( ) Patient	( ) Medical Staff	( ) Administrative Staff	( ) Visitor	
4. Duration of Stay in Facility	( ) Less than 1 week	( ) 1–4 weeks	( ) 1–6 months	( ) Above 6 months	
5. Type of Ward/Unit/Department:	.....				

SECTION B: PERCEPTION OF HOSPITAL ENVIRONMENT

Please indicate your level of agreement with the following statements using the scale provided:

Scale:
1 = Strongly Disagree 2 = Disagree 3 = Undecided 4 = Agree 5 = Strongly Agree

S/N	Statement	1	2	3	4	5
1	The hospital spaces are visually appealing and pleasant.	☐	☐	☐	☐	☐
2	The indoor temperature is comfortable.	☐	☐	☐	☐	☐
3	The hospital environment feels safe and secure.	☐	☐	☐	☐	☐
4	Furniture and bedding are comfortable and supportive.	☐	☐	☐	☐	☐
5	Corridors and spaces are easy to navigate.	☐	☐	☐	☐	☐

SECTION C: PERCEPTIONS OF HEALING DESIGN FEATURES

S/N	Healing Space Feature	1	2	3	4	5
6	Adequate natural lighting improves mood and comfort.	☐	☐	☐	☐	☐
7	Proper ventilation improves wellness and healing.	☐	☐	☐	☐	☐
8	Noise control supports patient rest and recovery.	☐	☐	☐	☐	☐
9	Availability of greenery or outdoor views reduces stress.	☐	☐	☐	☐	☐
10	The spatial arrangement supports staff efficiency.	☐	☐	☐	☐	☐
11	The use of colours contributes to relaxation and emotional calm.	☐	☐	☐	☐	☐

SECTION D: SATISFACTION AND HEALING EXPERIENCE

S/N	Statement	1	2	3	4	5
12	I am satisfied with the general hospital environment.	☐	☐	☐	☐	☐
13	The physical environment positively supports healing.	☐	☐	☐	☐	☐
14	The architectural design reduces stress and anxiety.	☐	☐	☐	☐	☐
15	I would prefer similar healing-space designs in future facilities.	☐	☐	☐	☐	☐

SECTION E: SUGGESTIONS FOR IMPROVEMENT

Kindly provide your suggestions on improving healing and comfort in the hospital environment: