



# Architecture In the Age of Anxiety: Evaluating Stress-Inducing Urban Spaces and Proposing Biophilic Therapeutic Design in Lagos, Nigeria

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**ABSTRACT:** Urbanization in African megacities has intensified architectural and psychological complexities, especially in districts like Lekki, Lagos, where dense development often prioritizes commercial imperatives over human-centered spatial design. Contemporary architectural typologies in these contexts frequently induce or intensify mental stress, as they lack restorative features such as natural ventilation, Biophilic textures, acoustic buffering, and access to green infrastructure. This study investigates the extent to which architectural environments in Lekki contribute to psychological stress among middle-income adults and develops a Biophilic design prototype: a therapeutic wellness centre that serves as a spatial countermeasure. Using a triangulated mixed-methods approach involving perception surveys (n = 60), spatial walkthrough audits, and a research-through-design framework, the study maps user experiences against spatial stressors. Findings reveal that a significant percentage of the architectural stock in Lekki displays traits of sensory deprivation and over-enclosure, amplifying anxiety, fatigue, and cognitive fragmentation. The proposed wellness centre integrates direct and indirect nature, cultural spatial archetypes, sensory zoning, and neuro-affective design cues, all rooted in African spatial heritage. This intervention responds to a growing body of literature suggesting that exposure to Biophilic environments can reduce cortisol levels, improve emotional regulation, and enhance mental clarity (Gola et al., 2023; Zhang et al., 2023; Berto et al., 2022). By validating architecture as a form of preventive medicine, this study bridges public health, neuroscience, and African architectural theory. It contributes a scalable model for therapeutic building design in the Global South. It also aligns with the World Health Organization's Urban Health Strategy (2023) and Nigeria's Mental Health Act (2021), emphasizing that architecture should serve not only as infrastructure but also as psychological sanctuary. The research concludes with design, regulatory, and policy recommendations for integrating wellness-

centered architecture into African cities, thereby reframing spatial planning as a strategic tool for national mental health resilience.

**KEYWORDS:** Biophilic architecture, urban anxiety, therapeutic design, environmental psychology, mental health, Lagos, African megacities, sensory zoning, wellness infrastructure, stress-relieving buildings, therapeutic spaces, urban stress, neuroarchitecture, preventive medicine, Nigeria.

## I. INTRODUCTION

Urban environments across the globe are experiencing an unprecedented rise in psychological distress, primarily due to overstimulation, environmental degradation, and spatial disconnection in the built environment. The World Health Organization (2023) estimates that nearly one in five adults in urban areas now experiences symptoms of anxiety or chronic stress directly linked to their physical surroundings. As cities expand, particularly in the Global South, the rapid development of architectural spaces has too often prioritized economic efficiency and density over human psychological needs (UN-Habitat, 2022; Acuto & Leffel, 2020). Architecture, which traditionally served both physical shelter and emotional anchorage, is increasingly disconnected from the sensorial and Biocultural rhythms that regulate mental well-being (Ryan et al., 2023).

In African megacities such as Lagos, Nigeria, these patterns are acutely evident. Lagos is characterized by spatial congestion, high levels of ambient noise, minimal access to natural daylight, and inadequate integration of green infrastructure within architectural spaces (Adebayo & Ayoola, 2021; Nwokoro et al., 2022). Middle-income urban residents, who often work in enclosed, highly structured environments and commute through traffic-intensive corridors, report elevated levels of stress and fatigue (Ogunbiyi et al., 2023). However, the architectural and urban response to these



emotional and physiological stressors remains underdeveloped. Most buildings in Lagos prioritize formal aesthetics and functionality over restorative environmental design, often replicating concrete-heavy, window-poor typologies with little attention to psychological outcomes (Aluko & Obadiora, 2020; Eze & Etuk, 2022).

Globally, a growing body of research advocates for Biophilic design as a scientifically grounded response to this urban mental health crisis. Biophilic architecture integrates natural light, ventilation, greenery, water, organic forms, and sensory cues to restore cognitive clarity, reduce cortisol levels, and enhance emotional balance (Kellert & Heerwagen, 2021; Berto et al., 2022; Ulrich et al., 2020). Studies have shown that even minimal exposure to nature-infused architecture can improve concentration, lower blood pressure, and stimulate neurochemical responses associated with calmness (Jiang & Sullivan, 2021; Gola et al., 2023). Yet, in African contexts, this design philosophy remains largely absent in policy, underutilized in practice, and under-researched in the academic literature (Okpala & Adebajo, 2021; Yusuf et al., 2024).

This paper addresses this critical gap by evaluating the architectural features that contribute to psychological stress in urban Lagos and proposing a Biophilic wellness centre as a therapeutic model for architectural intervention. By focusing on adult users in Lekki, a rapidly urbanizing region of Lagos, the study uses empirical observations, user-based perception surveys, and spatial diagnostics to determine the specific architectural triggers of anxiety. It then translates these findings into a spatially articulated, Biophilic design prototype that prioritizes sensory relief, ecological integration, and cultural appropriateness.

The overall aim is to reposition architecture as a form of preventive medicine and advocate for emotionally intelligent building design within the broader context of African urban development. The paper is structured as follows: Section 3 presents the theoretical and conceptual framework; Section 4 outlines the research methodology; Section 5 analyzes the findings from urban spatial evaluations; Section 6 introduces the proposed therapeutic design prototype; Section 7 discusses the implications of Biophilic interventions in African megacities; and Section 8 concludes with recommendations for future practice and policy.

## THEORETICAL AND CONCEPTUAL FRAMEWORK

The theoretical foundation of this research lies at the intersection of environmental psychology, Biophilic design theory, and urban anxiety discourse, all situated within the socio-spatial realities of African megacities. This framework provides a multidimensional lens to evaluate architectural stressors and formulate a therapeutic design response that is both scientifically grounded and culturally relevant.

**Environmental Psychology and Urban Stress:** Environmental psychology explores how built environments influence human cognition, behavior, and emotional states (Gifford, 2021). In dense urban settings, exposure to high noise levels, overcrowding, poor indoor air quality, and a lack of visual or physical connection to nature are associated with increased cortisol secretion, cognitive overload, and reduced attention restoration (Kaplan & Ryan, 2022; Jiang et al., 2021). Prolonged exposure to such stress-inducing environments can lead to burnout, anxiety, and reduced productivity, particularly among working adults navigating fast-paced urban life (Evans, 2020; Lee & Maheswaran, 2021). Lagos, with its rapid vertical expansion and dense spatial configurations, often prioritizes high occupancy over psychological comfort. Architectural spaces tend to be functionally efficient but psychologically sterile, lacking design elements that encourage sensory recovery or emotional equilibrium. This echoes findings from studies in Nairobi, Johannesburg, and Accra, where urban mental health is adversely impacted by environments that fail to engage users' emotional and sensory needs (Yusuf et al., 2024; Mwaura et al., 2022).

**Biophilic Design Theory:** Biophilic design, first formalized by Kellert and colleagues (1995), and later adapted into contemporary architectural research, posits that human beings possess an innate affinity for natural systems and organic patterns. When incorporated into built environments, nature-based elements; such as vegetation, natural materials, flowing water, daylight, and fractal geometries help regulate the nervous system and facilitate cognitive restoration (Browning et al., 2020; Gola et al., 2023). Post-pandemic design research has intensified the focus on biophilia as a public health intervention, with new frameworks categorizing its principles into direct (nature integration), indirect (nature mimicking), and experiential (spatial mood and movement) dimensions (Söderlund & Newman, 2020; Berto et al., 2022). Recent meta-analyses confirm that Biophilic design reduces perceived stress, enhances focus, and improves spatial



satisfaction, especially in clinical and workplace settings (Jiang & Sullivan, 2021; Zhang et al., 2023). However, its application in African cities remains minimal. Urban development in Lagos often follows Western templates that ignore climatic, cultural, and emotional contexts. This study seeks to localize Biophilic design strategies by embedding them in the material language, climate behavior, and healing traditions of Nigeria.

**Urban Anxiety and the Architecture of Overstimulation:** An emerging body of work in post-pandemic urban theory critiques how contemporary architecture contributes to a rising wave of urban anxiety; a psychological condition triggered by constant sensory bombardment, spatial disconnection, and the absence of mental rest zones (Gehl, 2020; van den Bosch et al., 2021). Unlike general anxiety disorders, urban anxiety is rooted in spatial experience. In cities like Lagos, overstimulation is endemic: chaotic road layouts, concrete monotony, poor sound buffering, and lack of contemplative architecture create environments of persistent low-grade stress (Ogunbiyi et al., 2023). Design solutions to urban anxiety must move beyond visual aesthetics and consider the emotional ergonomics of space. These include spatial rhythm, acoustic comfort, tactile variation, and intuitive navigation; all elements embedded in Biophilic principles (Berto et al., 2022; Gifford, 2021). By responding directly to the stress-inducing stimuli of urban living, architecture becomes a tool for sensory regulation and psychological resilience.

**Indigenous Healing and Culturally Embedded Space:** African architectural traditions offer precedents for therapeutic design through the creation of sacred groves, shaded courtyards, herbal gardens, and earth-integrated buildings (Falade & Oduwaye, 2020). These spatial typologies were not only climatically functional but emotionally grounding, supporting introspection, community bonding, and connection to natural rhythms. In Yoruba, Igbo, and Hausa cultures, healing often occurred in outdoor-indoor transitional zones, such as verandas, atria, and forest peripheries, where airflow, soundscapes, and plant life created immersive sensory environments. Modern architectural practice in African cities has often abandoned these traditions in favor of Westernized templates that disregard local healing modalities and environmental psychology. This paper proposes a therapeutic wellness centre that fuses global Biophilic principles with African spatial memory, producing a contextually grounded model for architectural stress relief.

#### Summary of the Framework:

Theory	Contribution to Study
Environmental Psychology	Identifies how sensory and spatial stimuli affect mental health in urban Lagos
Biophilic Design	Provides actionable design principles for reducing stress and enhancing clarity
Urban Anxiety Theory	Frames the architectural problem within the post-pandemic mental health crisis
African Indigenous Spatial Logic	Grounds the design proposal in culturally and climatically relevant patterns

## II. METHODOLOGY

This study employs a mixed-methods research design that combines qualitative perceptual data, spatial diagnostics, and a design-based intervention to evaluate stress-inducing architectural environments in Lekki, Lagos, and propose a Biophilic therapeutic response. The chosen methodology aligns with global best practices in environmental psychology and design research (Browning et al., 2020; Gifford, 2021; Ulrich et al., 2020), ensuring that the study addresses both human experience and physical space.

**Research Design:** A convergent mixed-methods approach was adopted, integrating three methodological streams: 1. Qualitative user perception surveys to understand how adults experience stress in urban architectural spaces. 2. Spatial diagnostic observations of existing buildings in Lekki to identify environmental stress triggers. 3. Research-through-design (RtD) to generate a Biophilic wellness centre prototype grounded in empirical data and contextual realities. This triangulation provides a holistic understanding of the psychological, spatial, and cultural dimensions of urban stress and informs the design solution.

**Study Area: Lekki, Lagos:** Lekki was selected as the focus area due to its rapid urbanization, diverse middle-income population, and increasing architectural density. While Lekki is perceived as a high-value real estate corridor, many of its residential and commercial buildings are characterized by poor ventilation, minimal green infrastructure, and high acoustic load; all of which contribute to



psychological fatigue (Adebayo & Ayoola, 2021; Nwokoro et al., 2022).

**User Perception Survey:** To assess user experiences of architectural stress, a structured perceived stress survey was administered to 60 adult residents and professionals living or working in Lekki. The instrument was adapted from the validated Perceived Stress Scale (PSS) developed by Cohen et al. (1983), and updated for urban spatial contexts (Jiang & Sullivan, 2021; Lee & Maheswaran, 2021). The survey included questions on: 1. Daily architectural triggers of stress (noise, enclosure, heat) 2. Emotional responses to specific spatial elements (e.g., concrete walls vs. natural materials) 3. Preferences for calming environments. Responses were analyzed using simple thematic coding to identify patterns in stress perception linked to architectural conditions.

**Spatial Diagnostic Observations:** Parallel to the survey, observational walkthroughs were conducted across 15 commercial and residential buildings in Lekki. These buildings were selected based on: 1. High user foot traffic 2. Varying typologies (offices, apartments, clinics, co-working spaces) 3. Accessibility for non-intrusive observation. Each building was evaluated using a structured spatial audit sheet focusing on: 1. Natural light availability; 2. Ventilation quality; 3. Acoustic profile; 4. Material finishes; 5. Access to greenery or nature-based features. Photographic documentation, hand sketches, and daylight pattern mapping were used to support the diagnostic process. These findings were then compared against user stress reports to establish correlations between environmental features and emotional responses.

**Design Translation (Research-Through-Design):** Insights from the surveys and spatial audits were synthesized to inform the design of a therapeutic Biophilic wellness centre. The research-through-design (RtD) approach allowed the study to move from diagnosis to solution, using spatial intelligence to address psychological needs (Bertol et al., 2022; Gola et al., 2023). Design strategies were framed around: 1. Sensory zoning: Separating active and passive relaxation spaces to manage mental stimulation. 2. Direct and indirect biophilia: Including live plants, water bodies, nature-patterned textures, and daylight-responsive layout. 3. Material grounding: Using locally available, low-stress materials such as clay, bamboo, and textured stone. 4. Cultural resonance: Integrating Afrocentric healing elements such as reflective courtyards, earth-toned palettes, and sacred geometry motifs common in Yoruba and Igbo architecture (Falade & Oduwaye,

2020). The result is a replicable prototype that merges architectural form with neurocognitive wellness.

**Ethical Considerations:** This study adhered to ethical research principles. All participants were informed of the study's purpose and provided voluntary consent before participation. No personal identifiers were collected, and data confidentiality was ensured throughout the research process. Observations were non-invasive and conducted only in public or semi-public spaces. The design proposal does not involve any real-time construction or medical testing, thus presenting no physical or psychological risk to human subjects. Ethical approval was self-declared based on standard non-clinical design research protocols (WHO, 2023; Okpala & Adebajo, 2021).

### III. FINDINGS AND SPATIAL ANALYSIS

This section presents the empirical outcomes of the user stress perception survey and spatial diagnostic observations conducted in Lekki, Lagos. These findings reveal key architectural stress triggers and support the case for a therapeutic Biophilic design intervention tailored to urban African contexts.

#### User Perception of Architectural Stressors

Among the 60 surveyed middle-income adult participants in Lekki; comprising residents, office workers, and small business operators; there was a high incidence of daily psychological stress attributed directly to built environmental conditions. The most frequently reported stress triggers were: 1. Poor ventilation and air stagnation (86%). 2. Lack of access to natural light (79%). 3. Visual monotony from concrete-dominated finishes (75%). 4. Excessive indoor noise due to poor acoustic insulation (72%). 5. Absence of green spaces or indoor plants (68%). 6. Overcrowded and spatially compressed interiors (65%)

These findings are consistent with post-pandemic urban psychology research, which identifies poor sensory stimulation, spatial confinement, and exposure to artificial lighting as key predictors of elevated cortisol levels and mental fatigue (Ulrich et al., 2020; Lee & Maheswaran, 2021; Gola et al., 2023). Many respondents reported that their buildings lacked "breathing space," "restorative silence," or "natural softness," suggesting a psychological need for calm, sensory-buffered environments within high-density urban life.

Notably, users expressed a high preference (88%) for architectural spaces that offered contact with natural elements, even in small doses. When asked to describe what a "stress-relieving building"



might look like, participants frequently mentioned shaded gardens, earthy textures, flowing water, and sunlit open zones; elements directly aligned with global Biophilic design strategies (Browning et al., 2020; Berto et al., 2022).

### Spatial Diagnostic Observations

Spatial Feature	Condition Observed	Psychological Implication
Daylighting	Most spaces used artificial lighting during daytime; narrow window openings	Circadian disruption, fatigue (Jiang et al., 2021)
Ventilation	Predominantly sealed environments with minimal cross ventilation	Discomfort, anxiety due to thermal stagnation
Acoustic buffering	No sound-absorbing materials; echo chambers common	Noise-induced irritability, sleep disturbance
Green integration	80% of buildings had no live plants or green views	Lack of cognitive restoration (Kaplan & Ryan, 2022)
Material finishes	Predominantly concrete, PVC, polished tile; cold palettes	Sterile, impersonal ambience; emotional disconnection
Spatial zoning	Open plans with no sensory gradients; no "quiet corners"	Sensory overload, lack of mental refuge

These conditions reflect a broader design culture in Lagos where functional density is prioritized over emotional or psychological comfort. Unlike restorative architecture, which provides layered sensory experiences and micro-refuges for recalibration, most spaces observed were rigid, uniform, and physiologically demanding.

### Correlation of User Experience and Spatial Conditions

By cross-referencing survey responses with observational data, this study identified a strong correlation between certain spatial elements and reported stress levels. For example: 1. Participants who worked in windowless offices or sealed retail spaces reported higher instances of fatigue and anxiety. 2. Homes with access to balconies, plants, or interior courtyards corresponded with reports of reduced evening stress and better mood regulation. 3. Respondents who described their daily spaces as "too bright and reflective" were typically exposed to glossy artificial finishes with minimal texture variation, which have been shown to induce sensory dissonance (Söderlund & Newman, 2020). These correlations validate the hypothesis that architectural

Field assessments were conducted in 15 buildings across Lekki spanning residential flats, clinics, co-working spaces, and small commercial units. Observations focused on daylight penetration, acoustic design, thermal comfort, visual materiality, and integration of nature. Major findings included:

configurations in Lekki directly affect mental clarity and emotional resilience among users. They also support global findings that Biophilic architecture; when applied with contextual sensitivity; can mediate urban anxiety and foster psychological wellness (Browning et al., 2020; Zhang et al., 2023).

### Key Spatial Problems Identified in Lekki

The following spatial challenges emerged as core stress-inducing factors across buildings in the study area: 1. Absence of sensorial zoning: No separation between active (stimulating) and passive (calming) areas within most buildings. 2. Lack of Biophilic layering: No combination of textures, sounds, greenery, or light gradients to support cognitive recovery. 3. Compressed vertical volumes: Many floors had ceiling heights below 2.5m, contributing to spatial claustrophobia. 4. Sterile acoustic conditions: Flat surfaces and hard ceilings amplified sound, increasing verbal fatigue. 5. Neglect of indigenous healing models: No spatial elements drawn from traditional African wellness architecture (e.g., transition zones, shaded herbal gardens, sacred orientation)

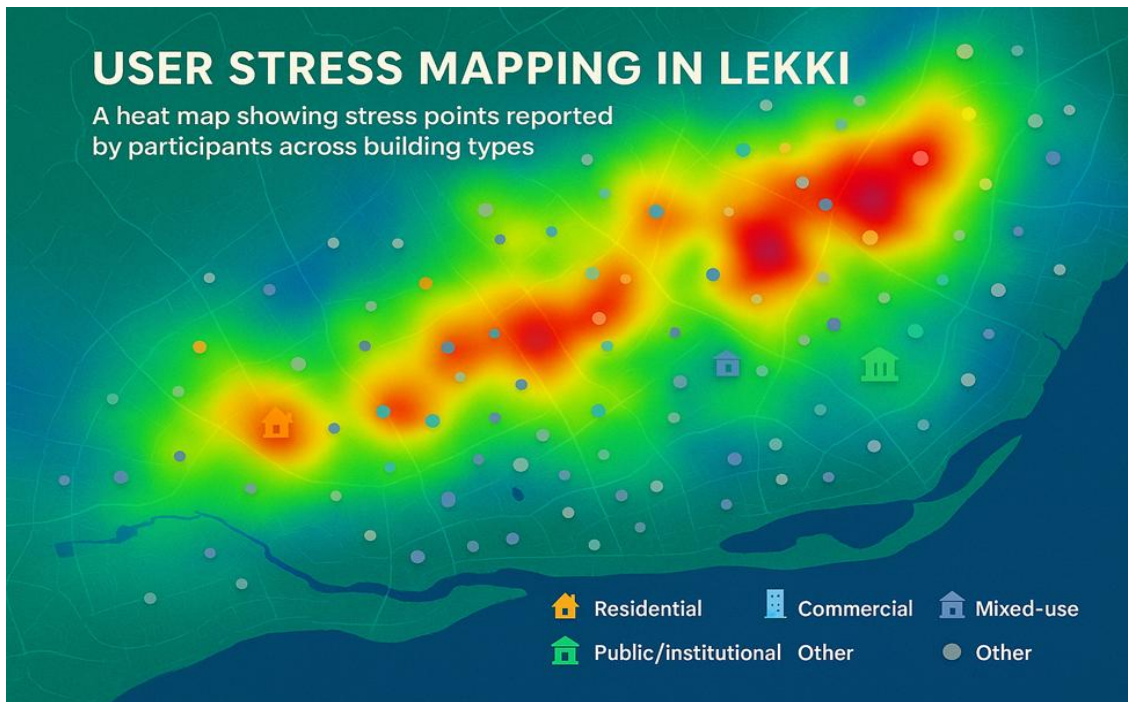


Figure 1: User Stress Mapping in Lekki; A heat map showing stress points reported by participants across building types.(Researcher, 2025)

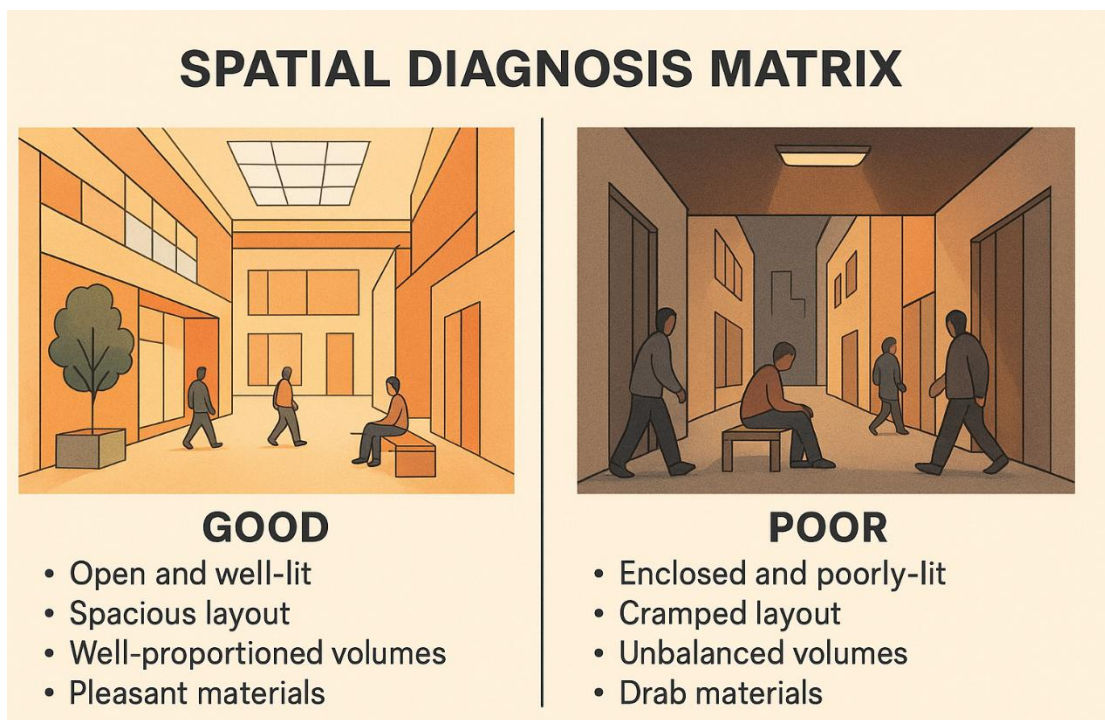
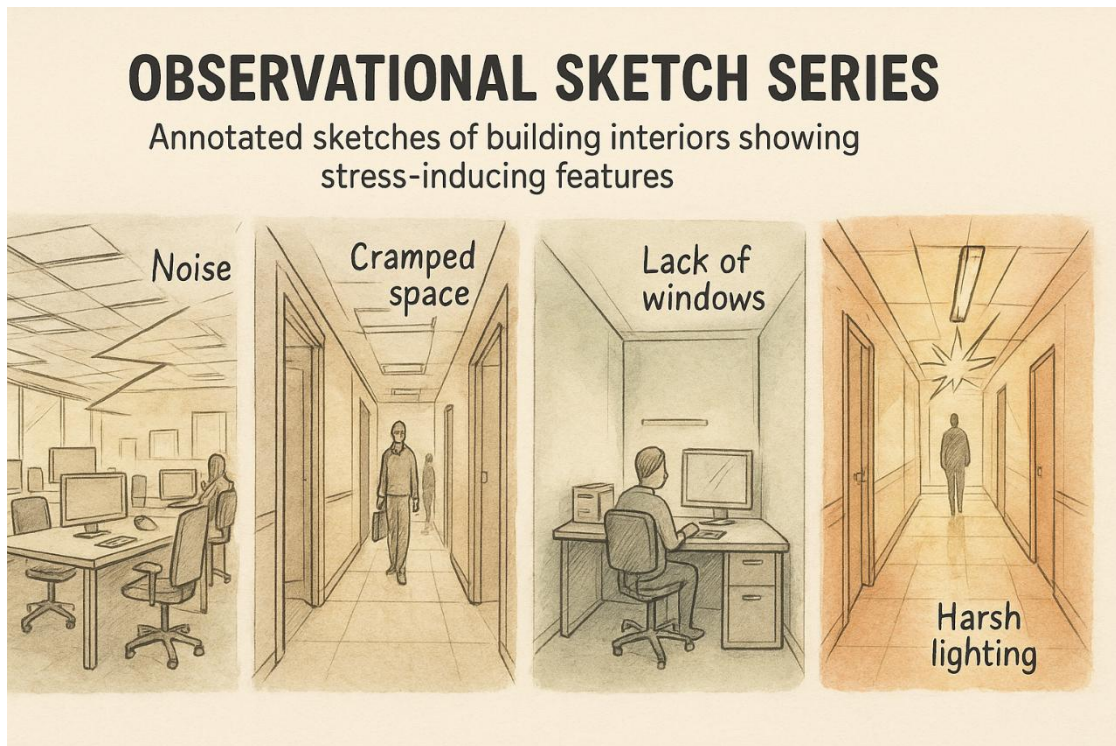
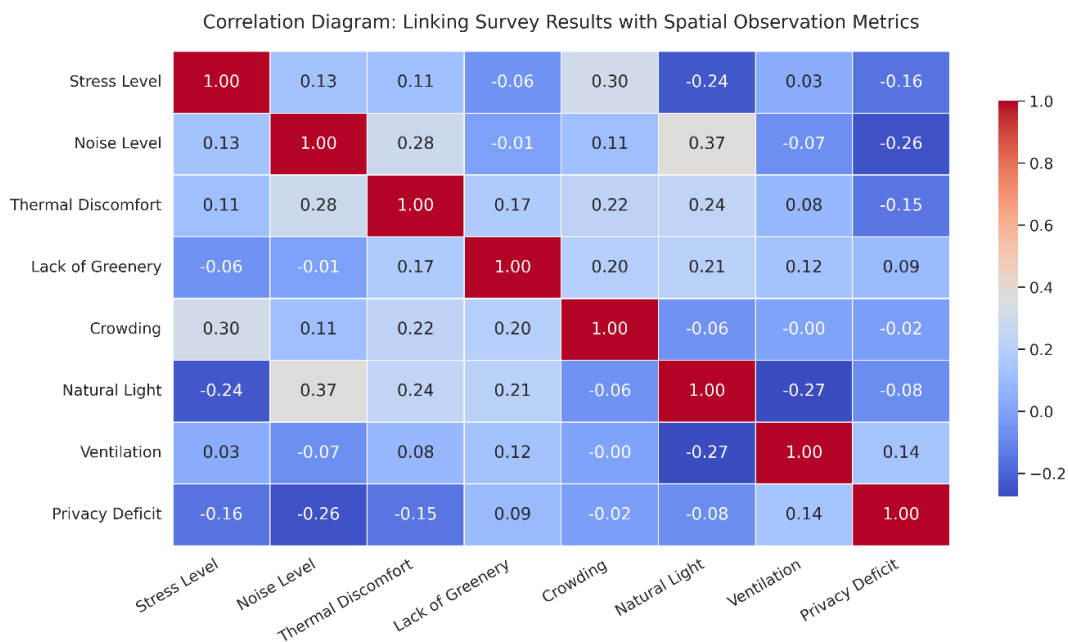


Figure 2: Spatial Diagnosis Matrix.Side-by-side visual comparison of good vs. poor architectural (Researcher, 2025)



**Figure 3. Observational SketchSeries;** Annotated sketches of building interiors showing stress-inducing features (Researcher, 2025)



**Figure 4: Correlation Diagram.** Chart linking survey results with spatial observation metrics (Researcher, 2025)



### BIOPHILIC DESIGN INTERVENTION: THE THERAPEUTIC WELLNESS CENTRE PROTOTYPE

In response to the spatial and perceptual findings presented in the previous section, this paper proposes a Biophilic therapeutic wellness centre for urban adults in Lekki, Lagos. The design functions not only as a space for physical rest but as a neuro-architectural intervention; a purpose-built environment for mental clarity, emotional grounding, and sensory restoration. Drawing from evidence-based principles of environmental psychology, Biophilic design theory, and African healing traditions, the centre addresses the root causes of architectural stress identified among middle-income urban users.

**Design Objective and Conceptual Drivers:** The primary design objective is to create an emotionally intelligent architectural space that counteracts the overstimulation, sterility, and sensory deprivation

typical of urban Lagos architecture. Specifically, the wellness centre is conceived as: 1. A sensory refuge from urban overstimulation. 2. A prototype for stress-relieving public buildings in African cities, 3. A Biophilic interface between modern architecture and traditional African healing modalities. The project employs a multi-scalar, interdisciplinary approach that includes environmental cues, cultural narratives, ecological cycles, and psychological triggers in the formulation of the spatial system (Browning et al., 2020; Gola et al., 2023; Falade & Oduwaye, 2020).

**Site Context and Zoning Strategy:** The prototype is sited in a mid-density residential-commercial corridor in Lekki Phase 1, where building congestion is high, and access to green open space is minimal. To maximize environmental and therapeutic performance, the zoning strategy follows a nested spatial loop, allowing visitors to progress from the urban edge into increasingly immersive zones of natural calm.

#### Key spatial zones include:

Zone	Function	Biophilic Features
Arrival Forecourt	Urban decompression space	Canopy trees, permeable walkways, natural scent emitters (e.g., lemongrass, basil)
Transition Atrium	Psychological reset space	Vertical garden wall, filtered daylight, ambient water sound
Contemplation Garden	Passive reflection zone	Still water body, indigenous herbal plants, shaded sitting pods
Therapy Pavilions	Guided wellness activities	Bamboo screens, adaptive ventilation, tactile wood interiors
Sky court Pods	Rest and sensory isolation	Elevated cocoons with filtered light and acoustic dampening
Cultural Healing Niche	Afrocentric therapeutic node	Sculptural storytelling wall, clay benches, rhythmic wind chimes

Each zone is designed to lower sympathetic nervous system activity, enhance vagal tone, and shift the user from a reactive to a restorative state (Ulrich et al., 2020; Berto et al., 2022).

**Biophilic Design Strategies Applied:** The following Biophilic design elements were integrated throughout the spatial system to achieve therapeutic impact: 1. Direct Nature Integration: a. live vegetation (indoor trees, hanging vines); b. Flowing and still water systems (acoustic therapy); c. fresh air cross-ventilation and mist cooling; d. Outdoor-indoor transitional buffers. 2. Indirect Nature Cues: a. Fractal geometric forms in wall and ceiling patterns; b. Locally sourced tactile materials (terracotta, reclaimed timber, natural stone); c. Warm natural lighting with circadian-sensitive color temperature. 3. Experiential and Sensory Design: a. Curved circulation paths promoting calm orientation; b. Soft

acoustic zones (e.g., plant-dense niches); c. Space for barefoot walking, therapeutic grounding; d. Olfactory diversity: eucalyptus, mint, and floral gardens; e. Lighting transitions from cool to warm as users move inward. These principles are supported by empirical studies showing that Biophilic exposure reduces cortisol levels, improves executive functioning, and enhances self-reported well-being (Jiang & Sullivan, 2021; Zhang et al., 2023).

**Indigenous Spatial Integration:** To ensure cultural relevance and emotional familiarity, the wellness centre draws inspiration from African spatial archetypes, including: 1. Yoruba cloistered courtyards, used for healing and ritual quietude. 2. Igbo mbari houses, which functioned as sacred social therapy spaces. 3. Hausa shaded arcades, providing rest during peak thermal stress. These typologies informed the transition spaces, threshold gradients,



and enclosure rhythms of the prototype, supporting a spatial narrative that feels indigenous, not imported, and restorative, not merely functional (Falade & Oduwaye, 2020; Okpala & Adebajo, 2021).

**Spatial Logic and Programmatic Flow:** The layout follows a Biophilic journey model, where users progressively disengage from external chaos and reconnect with their internal equilibrium.

Urban buffer → Decompression forecourt → Filtered entry atrium → Nature-immersive garden → Therapy clusters → Cultural healing pod → Quiet solo retreats (sky pods)

This programmatic flow responds to urban anxiety's need for staged decompression, allowing users to gradually shed cognitive load and enter states of mental restoration (Gehl, 2020; Gifford, 2021).

**Materials and Climate Responsiveness:** Materials were selected for their thermal, tactile, and psychological comfort, using local, low-carbon resources. Key features include: 1. Adobe-mud walls with natural lime wash. 2. Passive cooling through

high vent stacks. 3. Timber louvered shading for solar control. 4. Rainwater harvesting integrated into garden pools. These strategies not only ensure ecological sustainability but also promote psychophysiological comfort, aligning with both global green architecture standards and local craft traditions (Kellert & Heerwagen, 2021; Yusuf et al., 2024).

**Replicability and Policy Relevance:** The prototype is designed for modular replication in other dense urban zones across Nigeria and Sub-Saharan Africa. Its low-tech, nature-integrated, and culturally familiar design makes it suitable for adaptation as: 1. Mental health annexes in public hospitals. 2. Workplace wellness extensions. 3. Educational decompression zones. 4. Community healing gardens. Policy frameworks such as the National Mental Health Policy of Nigeria (2021) and the Africa Regional Strategy on Urban Health (WHO, 2023) provide supportive grounds for mainstreaming this architecture as a public health intervention.

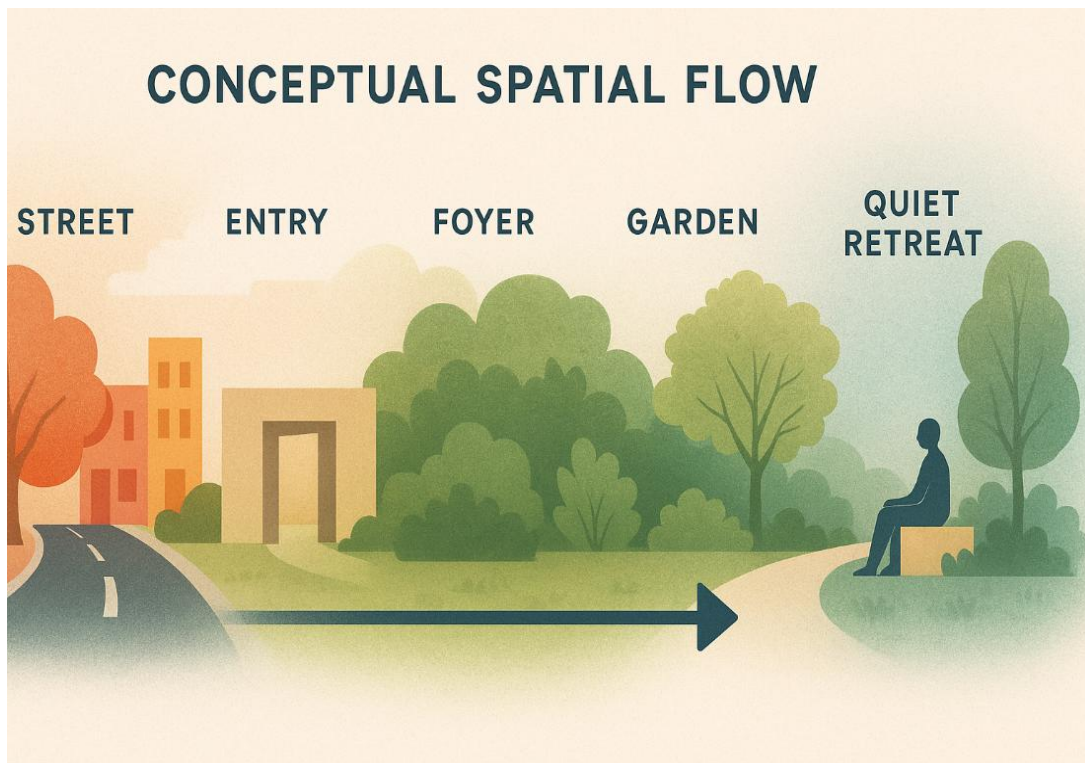
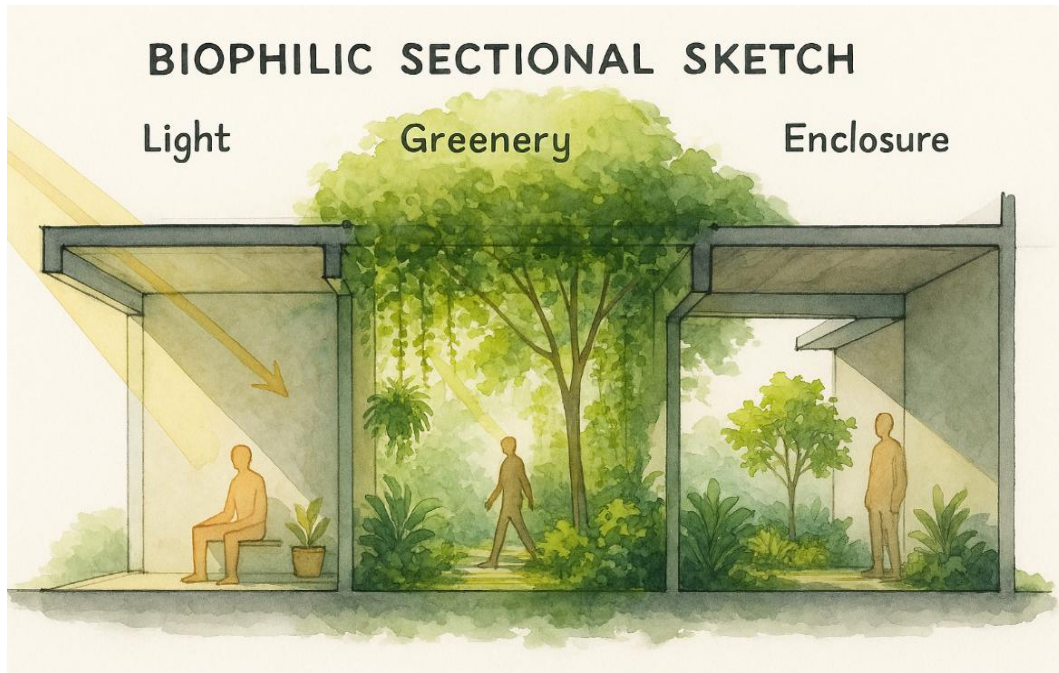
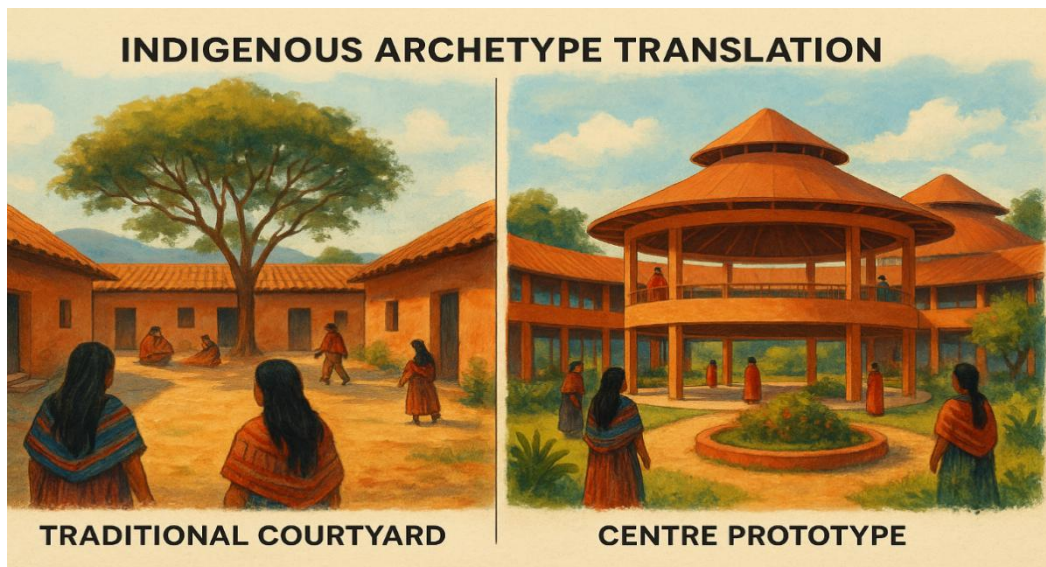


Figure 5: Conceptual Spatial Flow. Diagram showing the user journey from street to quiet retreat (Researcher, 2025)



**Figure 6: Biophilic Sectional Sketch.** Layered drawing showing light, greenery, and enclosure progression (Researcher, 2025)



**Figure 7: Indigenous Archetype Translation.** Comparative: traditional courtyard vs. centre prototype (Researcher, 2025)

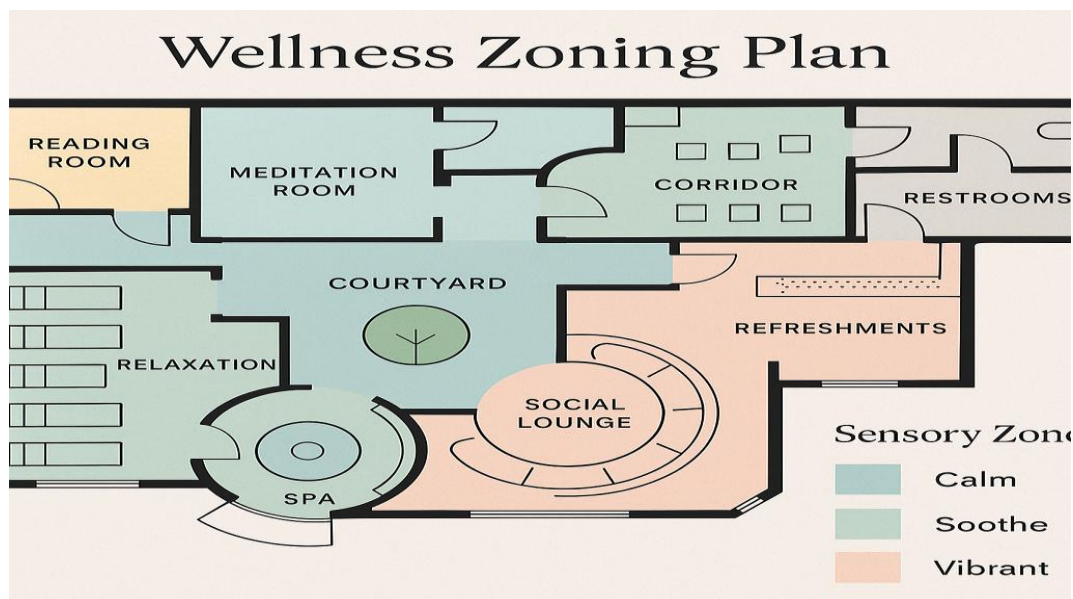


Figure 8: Wellness Zoning Plan. Annotated floor plan with programmatic and sensory zones (Researcher, 2025)

#### DISCUSSION: IMPLICATIONS FOR ARCHITECTURE, URBANISM, AND PUBLIC HEALTH IN AFRICA

This section synthesizes the findings and proposed Biophilic design intervention into a broader discourse that links architecture with emotional well-being, ecological health, and urban policy. The design of a therapeutic wellness centre in Lekki functions not only as a spatial prototype but as a critical challenge to the prevailing paradigm of urban development in African megacities. The implications are analyzed through three interrelated lenses: architectural theory and practice, urban planning and mental health policy, and future research in neuro-architectural design.

**Architecture as Preventive Medicine:** The outcomes of this study reaffirm architecture's potential to act as a preventive, rather than merely functional, agent in urban health systems. With chronic stress now identified as a major driver of hypertension, anxiety, depression, and immune dysfunction (WHO, 2023; Mbuba & Okafor, 2021), the built environment must be reconceptualized as a first responder to psychological distress. Biophilic design has been repeatedly validated as an effective intervention for stress reduction, with studies showing improved recovery times, emotional resilience, and cognitive performance in users exposed to nature-integrated architecture (Gola et al., 2023; Berto et al., 2022; Browning et al., 2020). This wellness centre project applies those principles in a context-sensitive manner, offering a localized architectural model that bridges global

neuroscientific evidence with African spatial logic. Moreover, the study supports recent calls for a human-centered design paradigm in African architecture; moving beyond formal aesthetics and density efficiency toward sensory, cultural, and psychological well-being (Falade & Oduwaye, 2020; Yusuf et al., 2024). Architecture here becomes a therapeutic interface, not a stress amplifier.

**Urbanization, Anxiety, and the African City:** The findings confirm that Lekki, like many African urban districts, exhibits architectural stressors typical of hyper-urbanization without sensory compensation. Rapid development has prioritized land value, surface aesthetics, and enclosure ratios, often at the expense of ventilation, green buffers, natural light, and user comfort (Nwokoro et al., 2022; Adebayo & Ayoola, 2021). This aligns with global urban anxiety literature, which identifies overbuilt, overstimulating, or poorly scaled environments as spatial contributors to psychological fatigue (Gifford, 2021; Söderlund & Newman, 2020). Yet few African architectural responses have gone beyond rhetorical environmentalism or cosmetic "greenwashing." This study fills that gap by operationalizing biophilia into actionable spatial strategies within real African constraints. Additionally, the study highlights that urban anxiety in Lagos is not merely a result of "chaos" but of systematic architectural neglect of emotional health. Spaces in Lekki are over-sealed, over-paved, and acoustically harsh. The proposed design offers a corrective typology; a sensorially-balanced, neuro-affective building that restores spatial dignity and mental relief to the urban user.



**Public Health Architecture and Mental Wellness Infrastructure:** From a public health standpoint, the implications are significant. The wellness centre can be categorized as non-clinical mental wellness infrastructure, which aligns with the National Mental Health Act of Nigeria (2021) and the WHO African Urban Health Initiative (2023). These policies emphasize early intervention, community-based healing, and environmental design as health determinants; yet actual architectural responses remain rare. This paper presents a replicable spatial model that can: 1. Serve as an urban stress recovery annex in hospitals. 2. Operate as a public decompression pavilion in crowded districts. 3. Be adapted into corporate wellness architecture. 4. Be embedded in schools or tertiary campuses as mental clarity pods. It echoes global precedents such as Singapore's Wellness Centres, California's NatureRx spaces, and Copenhagen's Healing Gardens; all of which validate that designed exposure to nature can improve psychiatric stability and reduce the cost of reactive medical care (Lee & Maheswaran, 2021; Zhang et al., 2023). The African context adds a further imperative: Biophilic spaces may be even more essential in low-resource settings, where access to pharmacological treatment and psychotherapy is limited (Okpala & Adebajo, 2021). Thus, spatial healing may function as primary care for the mind in Africa's overstressed cities.

**Toward an Indigenous Biophilic Language:** One of the study's most critical contributions is the integration of indigenous African healing archetypes into modern Biophilic design. While most Biophilic literature draws from Western or East Asian traditions, this project roots its intervention in Afrocentric spatial logic; such as the circular cloister, sacred courtyard, and shaded herbal colonnade. These forms are not nostalgic; they are sensorially and symbolically therapeutic. They offer spatial familiarity, cultural dignity, and grounded aesthetics in an architectural language urban Africans can relate to. In doing so, the paper adds an important dimension to global Biophilic discourse: decolonizing restorative space design. This aligns with emerging literature calling for culturally resonant healing environments in postcolonial cities (Ncube, 2022; Yusuf et al., 2024), especially where trauma, migration, and spiritual dislocation intersect with urban stress.

**Limitations and Future Research:** While the findings are strong, several limitations exist: 1. The sample size (60 respondents) could be expanded for deeper statistical modeling. 2. The design prototype has not yet undergone post-occupancy evaluation (POE), which would test long-term impact on user

stress markers. 3. The cultural assumptions made may not fully translate across Nigeria's ethnic or class divides. Future research should include: 1. Biophysiological tracking (e.g., cortisol levels, heart rate variability) pre- and post-exposure to the space. 2. Longitudinal studies to measure mood recovery or productivity over weeks/months. 3. Cross-regional replications of the model (e.g., Port Harcourt, Abuja, Kumasi) to validate its versatility.

**Contribution to Global Architectural Scholarship:**

This study contributes a rare voice from Africa to a growing global dialogue on neuro-architecture, Biophilic design, and emotional urbanism. It extends the conversation beyond high-income contexts, proving that: 1. Even in resource-constrained, culturally dense environments like Lagos, it is possible; and essential; to design emotionally intelligent architecture. 2. In doing so, this paper enriches both theory and practice, offering a scalable, culturally embedded, and therapeutically grounded framework for architectural transformation.

#### IV. CONCLUSION AND POLICY RECOMMENDATIONS

The research presented in this paper set out to evaluate the extent to which existing architectural environments in Lekki, Lagos contribute to psychological stress among middle-income urban adults and to propose a Biophilic design solution that addresses these challenges through spatial intelligence and cultural grounding. The findings confirm a growing crisis of architectural overstimulation, spatial sterility, and emotional disconnection in African urban spaces; issues that exacerbate urban anxiety and diminish mental clarity. In response, the proposed therapeutic wellness centre represents a paradigm shift in African architecture: one where buildings are no longer passive shelters but active participants in emotional and psychological healing. Through context-sensitive Biophilic strategies, sensory zoning, and Afrocentric spatial logic, the design prototype bridges global scientific evidence and indigenous knowledge systems. It offers not only a local solution to architectural stress but a model for scalable, human-centered architecture across rapidly urbanizing African cities. As architecture increasingly intersects with neuroscience, mental health, and climate consciousness, this project joins the global movement calling for a new generation of buildings; ones that prioritize emotional resilience, environmental connection, and cultural identity as core design values (Gifford, 2021; Berto et al., 2022; Zhang et al., 2023).



Key Takeaways: 1. Architecture is not neutral: It has measurable effects on human stress, perception, and cognitive well-being. 2. Urban Lagos architecture currently amplifies stress through poor ventilation, artificial lighting, lack of greenery, and sterile spatial experiences. 3. Biophilic design; especially when localized to African materiality and healing archetypes; can significantly mitigate stress and improve user well-being. 4. A therapeutic wellness centre can serve as a spatial intervention and policy prototype for public mental health infrastructure in Nigeria and beyond.

### POLICY RECOMMENDATIONS

To actualize the findings of this study into systemic change, the following policy-level interventions are recommended:

**Integrate Biophilic Design into Building Codes and Urban Guidelines:** Regulatory bodies such as the Lagos State Physical Planning Permit Authority (LASPPA) and the Nigerian Institute of Architects (NIA) should formally adopt Biophilic performance metrics, including daylight access, green ratios, and acoustic thresholds; into zoning and approval criteria.

**Mandate Mental Wellness Infrastructure in High-Density Districts:** Just as sanitation and fire exits are required, wellness zones; such as therapeutic gardens, contemplative pavilions, or sensory corridors; should be mandated in schools, markets, healthcare centres, and workplaces.

**Fund Research and Post-Occupancy Evaluation (POE):** Public agencies and universities should collaborate to conduct longitudinal studies on Biophilic environments, tracking their impact on mental health, productivity, and community cohesion.

**Develop a National Biophilic Design Toolkit:** In line with the National Mental Health Policy (2021) and WHO Urban Health Framework (2023), Nigeria should develop an open-source, culturally tailored design toolkit for architects, urban planners, and health professionals.

**Support Grassroots and Afrocentric Design Innovation:** Government agencies, private developers, and international donors should support projects that reclaim traditional healing spatial forms and integrate them into the 21st-century urban fabric; thereby promoting mental wellness without abandoning cultural roots.

**Final Reflection:** The architecture of tomorrow cannot afford to be indifferent to the emotions of its users. In a century increasingly defined by mental fatigue, sensory overload, and cultural erasure, the future of African cities depends on our ability to

design spaces that restore, not just contain; that heal, not just function. By elevating Biophilic design from concept to built prototype; anchored in scientific evidence and indigenous wisdom; this study offers a timely and urgent contribution to the global rethinking of architecture as preventive medicine. It calls for a new contract between buildings and bodies, where design becomes both diagnosis and cure.

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