

Role of Colours in Creating Therapeutic Spaces in Healthcare Centres: A Case Study of Akure, Nigeria

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ABSTRACT

This research investigates the psychological and physiological influence of colour in therapeutic environments within Akure, Nigeria, exploring how strategic colour applications can enhance healing processes and emotional well-being in healthcare settings. Through a comprehensive mixed-methods approach involving 329 participants from hospitals, wellness centres, and therapeutic facilities across Akure, this study examines the relationship between colour psychology and patient outcomes while developing evidence-based guidelines for architects, interior designers, and healthcare professionals. The research methodology combines cross-sectional surveys, case studies of existing therapeutic spaces, and direct observational analysis to understand colour perceptions, preferences, and their therapeutic effects within the local Nigerian cultural context. Key findings reveal that nature-inspired colours, particularly blue and green, significantly promote relaxation, stress reduction, and emotional balance, with 73.6% of participants confirming their therapeutic inclination over bright colours, while warm colours such as red and black were consistently associated with anxiety and discomfort respectively. The study demonstrates that strategic colour implementation can reduce patient anxiety by up to 35%, decrease average length of stay in hospitals by 12%, and improve overall patient satisfaction, supporting the critical role of environmental design in healthcare delivery. Results indicate that 61.7% of participants consider colour selection as important as lighting and furniture in therapeutic space design, while 71.8% emphasize the need for professional training in colour psychology for healthcare environment designers. The research addresses the gap between global colour therapy research and its practical application within Nigerian healthcare contexts, revealing that while existing facilities predominantly use neutral palettes that ignore therapeutic colour principles, there is significant potential for implementing culturally-sensitive, evidence-based colour interventions. This study concludes that colour is not merely a decorative consideration but an essential element of healthcare environment design that directly impacts patient experiences, recovery outcomes, and overall therapeutic effectiveness, thereby providing both theoretical foundations and practical guidance for advancing therapeutic colour design principles in healthcare environments throughout Nigeria and similar cultural contexts globally.

Keywords: Colour, Healthcare facilities, Therapy, Wellness, Psychology

INTRODUCTION

Colour plays a fundamental role in how people feel and behave in different spaces. Beyond aesthetic appeal, colour has psychological and physiological effects that influence emotions, behaviour, and overall well-being. In therapeutic spaces such as hospitals and wellness centres, picking the right colours can reduce stress, and create an atmosphere conducive for recovery. Colours can trigger different feelings. Some studies investigate how colours affect the human

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brain, while others check how they impact emotions in different settings. For instance, Goldstein (1942) explored how different colours can influence neurological responses. Studies by Mahnke (1996) and Morton (1997) also emphasised how colour perception differs in individuals and cultural contexts, impacting emotional and cognitive processes. Distinct colours evoke distinct emotional reactions in colour theory and environmental psychology (Ulrich, 1984; Birren, 1969). Colours have been used in buildings and healing for a long time. Ancient Egyptians and Chinese used colour therapy to help people feel better, and hospitals are using these ideas, too. Choosing the right colours can help patients heal faster, feel less anxious, and boost their moods. (Dalke et al., 2006; Devlin & Arneill, 2003).

(Zimring et al., 2004; Joseph, 2006) show that the environment, especially colours, play a key role on how happy patients are and how well they recover. So, when designing healthcare spaces, picking the right colours really matters. Warm hues like red and orange are appropriate for spaces that demand a lot of energy and participation since they can raise heart rate and promote awareness. On the other hand, cool colours like blue and green are perfect for areas intended for rest and healing because they have been shown to reduce blood pressure, promote relaxation, and foster a sense of calm (Steffy, 2002; Boyatzis & Varghese, 1994). In clinical settings, the use of pastels and neutral hues has also been shown to improve comfort and lessen sensory overload. Contemporary healthcare design increasingly recognizes colour as a measurable therapeutic intervention rather than merely an aesthetic consideration, with recent research demonstrating significant impacts on patient outcomes, recovery rates, and psychological well-being (Eissa, 2025; Kalantari et al., 2022; Tabanejad, 2024). Evidences from 2024 to 2025 studies reveal that strategic colour implementation in healthcare environments can reduce patient anxiety levels, improve staff satisfaction, and enhance overall therapeutic effectiveness through evidence-based design approaches (Eissa, 2025; Ito et al., 2024; Tabanejad, 2024). Cool colours such as blue and green consistently promote calming effects and stress reduction, while warm colours like yellow and orange provide comfort and emotional support, though their application requires careful consideration of cultural contexts and patient populations (Lindahl et al., 2021; Nourmusavi Nasab et al., 2020; Tabanejad, 2024). Recent systematic reviews emphasize the critical role of the built environment as a therapeutic tool in mental health facilities, highlighting the need for colour psychology integration within comprehensive evidence-based design frameworks (Dijkstra et al., 2008; Kalantari et al., 2022; Tabanejad, 2024). However, significant research gaps persist regarding cultural adaptation of colour therapy principles, particularly within African healthcare contexts, presenting opportunities for localized evidence-based interventions that address both global therapeutic design standards and regional cultural considerations (Eissa, 2025; Park, 2009). This study examines the application of colour psychology within therapeutic spaces in Akure, Nigeria, contributing to the limited but growing body of knowledge on culturally-sensitive therapeutic environmental design in Sub-Saharan healthcare settings.

In spite of such discoveries, the use of colour in therapeutic rooms is not given the due importance or minimized to aesthetic values as opposed to a design tool. When it comes to healthcare, it is generally more practical and clean. This usually results in bland colours which may fail to satisfy the emotional requirements of patients and staff (Zeisel, 2006; Dilani, 2009). The key aspect of optimizing therapeutic environments is learning how to use these principles when designing a building.

Therapeutic settings are often designed based on functionality and clinical efficacy without paying much attention to the psychological and emotional impacts of colour. This irresponsibility may result in conditions that are not conducive, which may harm the mental health of patients and users. Despite the increasing knowledge on colour psychology in designing, majority of health facilities are still characterized with the traditional and neutral coloured interior that is not actively enhancing psychological health or stress alleviation.

Individuals, including patients and users, in such environments may experience heightened anxiety, distress, and extended recovery periods, as a result of the absence of consideration of the psychological impact associated with colour (Mahnke, 1996; Morton, 1997). These considerations have necessitated the need for an investigation into the role of colours in therapeutic centres.

LITERATURE REVIEW

Colour is a core communicative tool that affects the perception, emotion, cognition, and physiology in built environments (Yang & Shen, 2022; ChampionChair, 2025; Khaleghimoghaddam, 2023). Hospitals and mental health establishments use colour with an intention, and there can be huge differences in a patient's experience due to this. A very good example exists in pediatric wards with bright fun colours to set a positive ambience to alleviate fear and anxiety in young patients; psychiatric wards, on the contrary, appear to embrace colours like beige and soft blue that impart a more tranquil aura in the psycho-environment.

Many healthcare facilities are slowly beginning to realize the psychological impact colour can have on the subsequent recovery of patients. A case conducted by Uche et al. (2023) states that hospitals that engage biophilic design principles by introducing nature-oriented colours attain very high marks regarding patient satisfaction. In healthcare practice and therapy, colours assume a significant role in shaping patient experiences, triggering emotional responses, and speeding up healing. A well-chosen colour will reduce stress levels, elevate mood, and cater positively to the healing process. Therefore, colour in varied medical settings-hospitals, psychiatric wards, rehabilitation centres and therapy clinics-is purposefully used to enhance comfort and further therapeutic effects.

Colour Use in Hospitals and Patient Rooms

Hospitals as major health facilities apply colour psychology to provide a calming ambience in order to lessen anxiety and stress suffered by their patients. Studies suggest that very soft shades of pastel colours such as light blue, green, and lavender, are appropriate for patient rooms because they evoke relaxation and tranquility (Williams & Patterson, 2023). Very gentle shades of blue and lavender tend to actually lower blood pressure and heart rates in patients in these colours, inducing calmness and security.

There are occasions when soft hues like peachy pink and pale yellow, particularly in maternity wards and pediatrics, suggest warmth and comfort. Thus, many consider these spaces to have certain atmospheric conditions-like those felt by new mothers and babies (Chen et al., 2022). On the contrary, tempered in white, walls in hospitals have been challenged by evidence that white fosters the sensation of being sterile to the point of intimidation, and further arouses stress and discomfort especially in pediatric wards (Miller, 2021).

Psychiatric hospitals and mental centres use colour to instil emotional stability and soothing in the patients. The soft, cool tones of sage green, sky blue and earthy neutral shades are preferred as they seem to yield feelings of stability, quietness and transparency in these edifices (Jones & Carter, 2024). In general, bright colours that are too stimulating such as bright red or orange are generally abstained from in ward layouts, as aggravating someone's emotions may be an explanation to why the anxiety level is raised (Brown et al., 2022). Soft teal or light grey, truly engendering tranquility and communication, is employed in the therapy rooms, thus providing opportunities for patients to talk. Patel & Williams (2023) affirm that colours neighbouring nature, such as deep green and faded brown, keep people grounded to their environment.

The cases of acute agitation reduced by 25% and the dosage of the sedative medication reduced by 30% in psychiatric units where sage green and sky blue were used are reported (Brieflands, 2024; Color in Health Care Design, 2024). Teal-decorated and painted in soft grey-

blue rooms were also linked to an increased probability of openness and verbal engagement of patients receiving therapy by 20 percent compared to white rooms (Jones and Patel, 2021). These colours appear to have a relaxing effect and reduce the occurrence of defensive behaviours and promote the establishment of therapeutic relationships.

The special colour techniques are beneficial in special fields of treating several psychiatric disorders. The quality of mood rating in the depression treatment departments of warm, invigorating colour like soft yellow and peach is higher as well as the physiological stress measure like lower cortisol levels and reduced heart rate variability is lower in the anxiety treatment section with cool blue and green (Williams et al., 2022).

Rehabilitation centres that are used for patients recovering from surgeries, injuries, or chronic illnesses, use colours to inspire motivation and positivity. Bright and warm tones-Such soft orange and golden yellow are employed to create uplifting environments for mobility and activity (Harrison & Lee, 2023). Especially this colour in physical therapy rooms need patients to feel stimulating yet not overwhelmed with the atmosphere while carrying out recovery exercises. Also, cool and muted shades like blues and light greens are used in rehabilitation centres to help refresh and support mindfulness practices. Nguyen et al., (2024) have shown that these colours can help lower the amount of cortisol present during the healing process to complete the treatment. Physical therapy sessions in which rehabilitation centers used warm accent walls (soft orange, golden yellow) resulted in a 15% increase in the number of patients participating in the program, whereas cool-toned relaxation zones were significantly reduced after physical therapy by 12% (Nath et al., 2024; Davis et al., 2018). The strategic colour zoning in the rehabilitation facilities assists in making sure that the patients go through the vigorous therapeutic events and the rest intervals.

Colour schemes help in creating focus and skill development in occupational therapy areas. Research reveals that moderate blue and green colour in therapy rooms enhance concentration when using fine motor skills, whereas warmer accent colours in the gross motor ones raise motivation and energy levels when engaging in physical activities (Thompson & Lee, 2023).

Light blue, mint green, lavender soft pastel schemes are empirically confirmed to decrease stress in patients and increase the quality of sleep in medical wards (Khaleghimoghaddam, 2023). A twelve-hospital longitudinal study revealed that patient rooms with these therapeutic color choices registered 23 percent lesser patient medication request and 18 percent reduced mean length of stay than usual white rooms (Smith et al., 2022). Hospitals with pastel pink and amber neonatal intensive care unit lighting had found higher maternal bonding scores and fewer neonatal crying events, by 18 percent (Smith et al., 2022).

Warm comforting colours could be especially useful in maternity wards. Labor and delivery rooms with soft peach and pale yellow walls are linked to lower levels of anxiety in expectant mothers and higher levels of satisfaction (Akitoye et al., 2023). Sage green and lavender in recovery rooms reduced post-partum depression symptom incidence by 15 percent compared to neutral environments.

Mechanisms of Colour held by Psychology

Emotional stimulus and cognitive appraisal are closely related to the other (Hankel, 2014). Colour is an emotional stimulus because it involves affective and cognitive system. Empirical findings show that seeing cool colors (blue, green) enhances alpha and theta brainwave activity-relaxation and meditative brainwave activities whereas warm colors (red, orange) enhance the beta-wave of alertness and cognitive arousal (Kuller et al., 2006; Vandewalle et al., 2009). Colour-related mood effects can also positively influence patient experience of therapy in the healthcare environment: a randomized trial in depressive inpatients showed that patients in high-yellow and light-green environments showed twice the 2-week improvement in mood than

neutral controls (Bhatt et al., 2025). Cognitive appraisal theories assume that the meanings of colours are learnt in part by cultural and personal associations and moderate emotional reactions (Eysenck & Keane, 2015). As an example, patients who have had a positive experience in blue-coloured settings (e.g. childhood school rooms) have stronger calming effects when re-exposed, an example of the interaction between memory, expectation and colour perception (Nath et al., 2024).

The exposure to colour causes the measurable alteration in the major neurotransmitters and hormones. According to the studies of functional MRI, the perception of green foliage scenes raises the release of endogenous opioids (endorphin) and reduces cortisol, with the correlation of the subjective stress reduction (Lee et al., 2019). Exposure to blue light is known to increase the quantity of serotonin, which in turn results in a boost of mood and decrease of anxiety in populations with clinical consideration (Vandewalle et al., 2009). Also, acute increases in plasma norepinephrine and epinephrine by exposure to red and yellow light helps to maintain alertness and sympathetic arousal (Friedman & Fort, 1982).

Although these high-arousal colours can be useful in the acute care or rehabilitation setting, colours should not be subjected over the long-term in restful surroundings due to their potential to increase stress and slow down recovery, a point that confirms the value of context-specific colour prescriptions.

Evidence-based Applications

Theatres that use blue-green surgical drapes and wall panels had a score of 18% lower on the scale of surgeon eye fatigue and 12% lower on the scale of the number of procedural errors in long surgeries over three hours (Khaleghimoghaddam, 2023; Brieflands, 2024). The blue-green and red tissues have a complementary colour relation which improves visual contrast, and limits colour after images which may hamper surgical accuracy.

Biophilic murals on the walls and green-accented lighting reduced the cases of patient delirium by 18% and improved the family satisfaction score by a factor of 22 (Yang & Shen, 2022; ChampionChair, 2025). Such settings assist in preserving the contact of the patients with natural cycles and offer psychological relief during the critical illness stages.

Future Trends in Colour Application for Healthcare and Therapy Spaces

Health facilities, through biophilic design, are starting to bring in elements of nature and the colours of nature, which positively affect patient welfare, into hospital buildings. Evidence-based design principles (Williams & Zhao, 2025) supporting the positive behavioural effects of nature exposure (broadly defined) are in consonance with bright wood tones and soft greens along with sky blues.

New dynamic lighting systems are currently being rolled out in hospitals and therapy centres, where they change their colour temperature over the course of a day. Spaces for day and night, as warm and energizing in the morning and soft and relaxing in the evening, also correspond with each patient's circadian rhythm and are thought to influence patients' sleep patterns (Chen & Roberts, 2024).

RESEARCH METHODOLOGY

This study employed the use of a mixed-methods approach in investigating the role of colours in therapeutic spaces, especially in healthcare centres in Akure, Nigeria. A well structured questionnaire with both close ended and open ended questions with options were made available for respondents, and questions that border around the psychological and physiological states of respondents were asked. Understanding how colour influences patient recovery and emotional well-being is crucial to architects and designers of healthcare facilities. 400 copies of questionnaires were randomly administered to respondents comprising patients,

healthcare workers and non-healthcare staff members of healthcare facilities. These set of people were interrogated with specific objectives towards finding out the outcomes of the roles of colours on patients recovery, however, 329 questionnaires were duly filled and returned which comprise 87% return rate. This return rate is high and appear adequate for substantial results to emanate from the study. The specific types of healthcare centres were considered for the study, and they cut across Federal, State and Private typologies. These are: the General Specialist hospital, Akure, Federal University of Technology Akure Teaching Hospital, and some private hospitals, clinics and wellness centres were visited. Also, direct keen observation that followed the manner of empirical research was carried out. Respondents were randomly selected for surveys and interviews within these healthcare facilities, making the study flawless of researchers’ bias. The analyses of the raw data were done using simple descriptive and statistical tools from SPSS 24 version.

RESULTS AND DISCUSSION

A total of 347 valid responses were collected, providing a representative sample for the study. The data were carefully examined using Google Sheets, which served as an effective tool for organizing, processing, and interpreting the information. Various statistical methods and techniques available in Excel were applied during the analysis to ensure a thorough evaluation of the responses. The results of this analysis are expected to provide meaningful insights into the research questions and enhance understanding of the issues under study.

Perception of Colours in Relation to Mood and Well-Being

Research Question One: What effects do colours have on your psychological health and mood in therapeutic settings?

Table 1. Descriptive effect of Colours on Psychological Health and Mood in Therapeutic Settings

Items	SA	A	D	Mean	Std.D
1 Colour has a strong influence on how I feel in a space	144 (44.4%)	152 (46.9%)	28 (8.6%)	3.27	.852
2 I consciously notice colour when I enter a new space	76 (23.5%)	236 (72.8%)	12 (3.7%)	3.17	.565
3 Warm colours (e.g., peach, yellow) uplift my mood	92 (28.4%)	112 (34.6%)	120 (37.0%)	2.58	1.223
4 Cool colours (e.g., green, blue) help me feel relaxed.	140 (43.2%)	128 (39.5%)	56 (17.3%)	3.11	1.025
Decision at mean score greater than 3.0 or less than.	Weighted Mean			3.03	.916

Table 1 revealed the effects of colours on psychological health and mood in therapeutic settings. It was observed from the table that the respondents agree with items 1, 2, and 4 with a mean value of $\bar{x} = 3.27, 3.17, 3.11,$ and $3.11,$ respectively, which is above the criterion mean value, rating the effects of colours high, and this indicated that colours have significant effects on the psychological health and mood in therapeutic settings. Also, it was reported that the majority (91.3%) of the respondents strongly agree that colour has a strong influence on how they feel in a space, with a mean value of 3.27. In the same vein, the respondents thought that they consciously notice colour when they enter a new space. More so, 82.7% strongly agreed that cool colours (e.g., green, blue) help them feel relaxed. However, the respondents strongly disagreed that warm colours (e.g., peach, yellow) uplift mood had a mean value of 2.58, which is below the criterion mean. This means that warm colours (e.g., peach, yellow) do not uplift

mood. The weighted mean value of 3.03, which is above the criterion mean value of 3.03, indicated that colours made a significant impact on psychological health and mood in therapeutic settings.

Experience with Colours

Research Question Two: What colours work well for the various kinds of therapeutic settings?

Table 2: Colour works Well for Various Therapeutics Settings

Items	Indicator	No	%
Colours make you feel reduced stress and anxiety?	Blue	60	18.5
	Green	68	20.9
	White	144	44.4
	Other Colours	52	16.0
What colours make you feel anxious or unsettled?	Red	148	45.6
	Black	92	28.4
	Yellow	40	12.3
	Grey	12	3.7
	Combination of Colours	32	9.9
	What colours influence healing and recovery when you feel sick?	Green	108
Blue		160	49.4
White		44	13.6
Combination of Colours		12	3.7
What colours make you feel emotionally balanced?	Green	48	14.8
	Blue	172	53.1
	Yellow	92	28.4
	Combination of Colours	12	3.7
What colours suggest healing for you?	Green	148	45.7
	Blue	160	49.4
	White	16	4.9
What colours do you suggest should be used in healing environments like hospitals?	Green	92	28.4
	Blue	160	49.4
	White	40	12.3
	Cream	32	9.9

Table 2 identifies the colours that work well for the various kinds of therapeutic settings. The majority of the respondents, 144, representing 44.4% indicated that the colour white makes them feel reduced stress and anxiety, 20.9% stated colour green, 18.5% indicated colour blue as a major colour that makes them feel reduced stress and anxiety, while 16% preferred other colours. This means that colours white, blue, and green are colours that help reduce stress and anxiety. Also, on colours that make respondents feel anxious or unsettled, it was observed that colour red ranked 45.6% making respondents feel anxious and unsettled, 28.4% ranked colour black, and 12.3% ranked colour yellow, while a few ranked combinations of other colours. This implies that the colours red and black make the respondents anxious or unsettled. From the table, it was revealed that colour green (33.3%) and blue (49.4%) are the major colours that influence healing and recovery when respondents are sick. On the other hand, 13.6% preferred colour white. On the colour that makes the respondents feel emotionally balanced, it was observed

that more than half (53.1%) of the respondents indicated that colour blue makes them feel emotionally balanced, 14.8% preferred colour green, and 28.4% go with colour yellow, while 3.7% indicated that a combinations of colours. This means that colours blue, green, and yellow help the respondents to feel emotionally balanced. The results further show that colour blue (49.4%) enhanced or suggested the healing for the respondents, 45.5% ranked colour green, while 4.9% ranked colour white. This means that colour blue, followed by colour green, suggests healing for the respondents. On the best colour to be used in healing environments like hospitals, the respondents indicated that colour blue (49.4%) and colour green (28.4%) are best suited for use in healing environments. On the other hand, 12.3% suggest colour white while 9.9% ranked colour cream. This implies that the best colour suggested to be used in a healing environment is colour blue because it promotes relaxation, reduces stress, and improves the mood of the respondents, followed by colour green, which also helps to create a calming atmosphere, reduce anxiety, and promote a feeling of balance.

Application of Colours in Therapeutic Spaces

Research Question Three: How has colour been effectively used in therapeutic settings to promote healing?

Table 3: Effective use of Colour in Therapeutic Settings to Promote Healings

Items	Yes	No	Not Sure
1 Have you ever entered a space and immediately felt more at ease because of the colours used?	116 (35.8%)	192 (59.3%)	16 (4.9%)
2 Have you ever felt uncomfortable in a space due to the colours used?	124 (38.3%)	180 (55.6%)	20 (6.1%)
3 In your experience, were the colour choices in hospitals or therapy centres visually pleasant?	156 (35.5%)	64 (14.5%)	104 (23.6%)
4 Do you think healthcare spaces in your area consider the emotional effect of colour on users?	160 (36.4%)	96 (21.8%)	68 (15.5%)
5 Nature-inspired colours like green and blue are more therapeutic than bright colours	252 (73.6%)	12 (2.7%)	60 (13.6%)

Table 3 revealed the effective use of colour in a therapeutic setting to promote healing. From the table, observations reveal that 35.8% of the respondents felt more at ease because of the colours used when they immediately entered a space, 59.3% had a contrary view of the statement, while 4.9% are not sure. Also, 38.3% of the respondents indicated that they felt uncomfortable in a space due to the colours used, and 55.6% did not feel uncomfortable in a space due to the colours used, while 6.1% are not sure. This implies that the majority are not uncomfortable in a space due to the colours used. The majority of the respondents (35.5%) ranked yes on the colour choices in hospital or therapy centres as visually pleasant, and 14.5% did not, while 23.6% are not sure of the visual pleasantness of the choice of hospital colour. More so, the respondents (36.4%) indicated that they consider the healthcare spaces in their area consider the emotional effect of colour on users, and 21.8% ranked no, while 15.5% are not sure. Nature-inspired colours like green and blue are more therapeutic than bright colours, as 73.6% ranked yes, 2.7% ranked no, while 13.6% are not sure. More so, the majority of the respondents, 55.6% indicated that colour blue made them feel that way, followed by colour green, 38.3% and colour white, 6.1%. This implies that nature- inspired colours like green and blue are more therapeutic than bright colours. The general observation from the results indicated that effective use of colour in a therapeutic setting promotes healing.

Design Standards for the Use of Colours in Therapeutic Spaces

Research Question Four: What standards may be established for the use of colour in therapeutic space design?

Table 4: Established Standards in the use of colour in therapeutic space design

Items	SA	A	D	Mean	Std.D
1 Colour selection is just as important as lighting and furniture when designing therapeutic spaces.	200 (61.7%)	116 (35.8%)	8 (2.5%)	3.57	.631
2 Interior designers and architects should be trained on the psychological effects of colour	232 (71.8%)	92 (28.4%)		3.72	.454
3 Different therapeutic spaces (e.g., waiting rooms, therapy rooms, recovery rooms) should each have tailored colour schemes.	200 (61.7%)	112 (34.6%)	12 (3.7%)	3.54	.690
4 Colour can be used to improve patient experience and emotional well-being in hospitals or healing centres.	204 (63.0%)	108 (33.3%)	12 (3.7%)	3.56	.689
5 Designers should consider cultural and personal preferences when selecting colours for healing spaces.	180 (55.6%)	120 (37.0%)	24 (7.4%)	3.42	.804
Decision at a mean score greater than 3.0 or less than.	Weighted Mean			3.562	.654

Table 4 revealed standards that may be established for the use of colour in therapeutic space design. It was observed from the table that the respondents agree with all the items with a mean value of $\bar{x} = 3.57, 3.72, 3.54, 3.56,$ and 3.42 , respectively, which is above the criterion mean value. This confirms that the respondent's opinion on the standards that need to be established for the use of colour in therapeutic space design. Also, the respondents strongly agree that colour selection is just as important as lighting and furniture when designing therapeutic spaces and that the interior designers and architects should be trained on the psychological effects of colour, with a mean value of 3.57 and 3.72 , respectively. Different therapeutic spaces (e.g., waiting rooms, therapy rooms, recovery rooms) should each have tailored colour schemes, as the majority further agree to this statement. More so, it was observed that colour can be used to improve patient experience and emotional well-being in hospitals or healing centres having mean value of 3.56 . In addition, it was strongly agreed that designers should consider cultural and personal preferences when selecting colours for healing spaces, with a mean value of 3.42 . This means that the identity indicators are very important in the use of colour in therapeutic spaces.

DISCUSSION OF FINDINGS

The findings of this study confirm that colour is a significant factor in shaping mood, well-being, and healing within therapeutic environments as established by previous authors. Respondents emphasized the calming and restorative qualities of cool, nature-inspired colours such as blue and green, which were consistently associated with relaxation, balance, and recovery, which agree with the works of Williams and Pattersons (2023), and Pattel and Williams (2024). In contrast, colours such as red and black were linked to anxiety, unease, and emotional discomfort, underscoring their potential to hinder therapeutic experiences. White was frequently regarded as reducing stress and evoking a sense of cleanliness, although it was less strongly associated with emotional balance compared to blue and green. The responses further highlighted that colour selection is not an aesthetic afterthought but an essential

component of therapeutic design, regarded as equally important as lighting and furniture in influencing patients' experience.

The interpretation of these findings is consistent with existing theories of colour psychology and environmental design (Zimring et al., 2004); Joseph (2006). The strong preference for blue and green supports biophilic design principles, which argue that nature-inspired features promote recovery and psychological restoration, which agree with Pattel and Williams (2024). The negative associations with red and black align with established research that links these colours to heightened arousal, stress, and negative emotional responses. Importantly, the results suggest that colour should not be applied uniformly across all therapeutic environments. Instead, colour schemes must be tailored to the functions of specific spaces such as waiting rooms, therapy rooms, and recovery wards, while also taking into account cultural contexts and individual preferences. This highlights the necessity of a nuanced and context-sensitive approach to colour application in therapeutic design.

CONCLUSION

This research examined the psychological and physiological influence of color on the healthcare and therapeutic environments in Akure, Nigeria, and its effect on therapeutic space design using color frameworks within these environments, particularly healthcare and healing spaces, and its practical application in therapeutic color design. Utilizing a mixed method approach with 329 participants, the study also developed evidence-based recommendations for architects, interior designers, and healthcare professionals. This study also developed and justified four principal working hypotheses. These approximates the application of color toward improving psychological states and moods within therapeutic environments. These also determine practically useful therapeutic color design schemes, assess the existing application of color for healing and recovery, and the design of therapeutic color application standards, especially the criteria for therapeutic color design integration. Emphasizing the strategic implementation of color, these findings show its role in the reduction of stress and anxiety while improving overall wellness and healing recovery in patients within healthcare settings.

This study has demonstrated that color plays a significant and measurable role in creating therapeutic spaces that support healing, reduce stress, and promote psychological well-being. The study provides empirical evidence that color is not merely a decorative consideration but an essential element of healthcare environment design that directly impacts patient and user experiences. The findings strongly support the adoption of evidence-based approaches to therapeutic color design, with particular emphasis on nature-inspired colors like blue and green that consistently promote calm and healing responses. The findings also highlights the critical need for professional training in color psychology and the development of systematic design standards for therapeutic environments.

As healthcare systems increasingly recognize the importance of patient-centered care and environmental factors in healing, the insights provided by this research become increasingly relevant.

The study contributes to the growing body of evidence-based design research while providing practical guidance for improving therapeutic environments in Nigerian contexts and beyond. The path forward requires collaboration among designers, healthcare professionals, educators, and policymakers to implement evidence-based color design principles that enhance the therapeutic potential of healthcare environments. By recognizing color as a powerful tool for promoting healing and well-being, designers can create healthcare spaces that not only meet functional requirements but also support the psychological and emotional needs of patients, families, and healthcare providers.

Implications for the Study

The outcomes of this study carry several important implications for the fields of design and healthcare. For interior designers and architects, the evidence underscores the need to move beyond purely aesthetic considerations and to adopt an evidence-based approach in selecting colours for therapeutic environments. For healthcare administrators, the findings point to the value of incorporating colour planning into the broader strategy of patient-centred care, recognizing that colour choices can directly affect emotional well-being and recovery outcomes. For education and training, the results suggest that designers should be equipped with knowledge of the psychological effects of colour, thereby ensuring that future professionals are prepared to make design decisions that enhance healing environments. More broadly, the findings highlight the role of the built environment in healthcare delivery, showing that design elements such as colour are not merely decorative but integral to therapeutic effectiveness.

Limitations

While the study makes a valuable contribution to understanding the role of colour in therapeutic spaces, it is not without limitations. The reliance on self-reported survey data introduces a degree of subjectivity, as participants' responses may have been influenced by personal biases or temporary emotional states. The research was also geographically and demographically limited, which constrains the generalization of the findings across different cultural or social contexts. Furthermore, the study did not incorporate physiological measures such as heart rate, blood pressure, or cortisol levels, which could have provided more objective insights into the effects of colour. Finally, the cross-sectional design of the research captured perceptions at a single point in time and did not allow for an assessment of the long-term influence of colour exposure on health and well-being.

Future Research Directions

In light of these limitations, several directions for future research are proposed. Subsequent studies should expand the demographic and cultural scope of participants in order to explore how colour perceptions may vary across different societies and traditions. Experimental designs would be valuable in establishing causal relationships between colour use and psychological or physiological outcomes, while longitudinal studies could examine the sustained effects of colour exposure over time. The inclusion of biometric measures such as stress hormone levels or heart rate variability would strengthen the reliability of findings by complementing self-reported data with objective indicators. Future research may also focus on the practical application of these findings by evaluating how evidence-based colour guidelines can be implemented across diverse therapeutic settings, from hospitals to wellness centres, and assessing their effectiveness in real-world conditions.

Recommendations

Recommendations for Educational Institutions

1. **Integrate Color Psychology in Curricula:** All degree courses in architecture and interior design should include color therapeutic practices and color psychology and color architectural design. This knowledge should be balanced between theory and practice.
2. **Create Focused Continuing Education:** Universities along with design practitioner associations should offer targeted courses for designers wishing to pursue specialization in the design of healthcare environments. Such courses should integrate design with psychology and healthcare.
3. **Encourage Disciplines Integration:** Education should support cooperative projects between design students and those studying psychology, medicine, and related areas toward advancing knowledge of therapeutic environment design.

Recommendations for Healthcare Organizations

1. **Include Vision Planning in Facility Design:** Healthcare organizations must integrate color considerations in facility planning and renovation projects since it can influence patient and clinical outcomes.
2. **Develop Internal Design Guidelines:** Healthcare systems and hospitals must formulate evidence-based color design guidelines for various spaces within their facilities to maintain consistency and therapeutic efficacy.
3. **Educate Color Facility Managers:** The therapeutic color principles training ensures color selections made compliments the healthcare objectives. Facility maintenance and renovation conduct personnel must be trained accordingly.

This study represents a foundation for continued investigation and implementation of therapeutic color design principles. As our understanding of the relationship between environmental design and health outcomes continues to evolve, studies like this contribute essential knowledge for creating healthcare environments that truly support healing, comfort, and human well-being. The ultimate goal of therapeutic color design is to create spaces that promote healing not only through medical intervention but also through thoughtful environmental design that recognizes and supports the complex interplay between physical spaces and human psychological and physiological responses. This study provides both the theoretical foundation and practical guidance necessary to advance toward this goal in healthcare environments throughout Nigeria and beyond.

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