Sprin Journal of Arts, Humanities and Social Sciences

ISSN: 2583-2387 (Online)

Vol. 4(12), Feb 2026, pp, 35-42

Journal homepage: https://sprinpub.com/sjahss

Research Article

Long-Term Inpatients' Physical Hospital Environment and Mental Health Outcomes: Evidence-Based from Panzi General Referral Hospital, Bukavu, DR Congo

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ARTICLE INFO

Keywords:

Long-term inpatients, Hospital's physical environment, Mental health Outcomes

Article History:

Received: 16-08-2025

Revised: 29-01-2026

Accepted: 19-02-2026

Published: 26-02-2026

ABSTRACT

This study investigates the influence of the hospital physical environment (HPE) on the mental health outcomes (MHO) of long-term inpatients (LTPs) at Panzi General Referral Hospital. Using a mixed-methods, convergent parallel design, data were collected from 84 participants (60 LTPs, 10 relatives, 14 healthcare providers) via census and random sampling, employing surveys, standardized tests (the WHO-5 or Subjective Well-Being Index and the K10 or Kessler psychological distress scale), and semi-structured interviews. Quantitative results revealed a complex relationship as a clean and safe HPE was significantly associated with reduced psychological distress (HPE → K10, $\beta = -0.343$, $p = 0.016$), but not with improved subjective well-being (HPE → WHO-5, $\beta = 0.310$, $p = 0.545$). Qualitative findings clarify this discrepancy, indicating that while the HPE is perceived positively, its benefits are overshadowed by a lack of privacy and amenities, carceral-like conditions, and exposure to daily trauma. The study concludes that while a functionally adequate HPE is necessary to mitigate distress, it is insufficient alone to promote patient well-being. Therefore, we propose a holistic model that integrates targeted improvements to the physical environment with essential social and relational interventions, such as cultural activities, shared spaces, and accessible amenities, to effectively support the mental health of LTPs.

Cite this article:

Kabesha, N. M., Simiyu , V., & S. Mutisya, Mary. (2026). Long-Term Inpatients' Physical Hospital Environment and Mental Health Outcomes: Evidence-Based from Panzi General Referral Hospital, Bukavu, DR Congo. Sprin Journal of Arts, Humanities and Social Sciences, 4(12), 35–42. https://doi.org/10.55559/sjahss.v4i12.578

Introduction

The social and physical hospital environments are increasingly recognised as critical, non-pharmacological factors influencing patients' outcomes, especially mental health outcomes (Ulrich et al., 2008). While the primary focus of a hospital is often on clinical treatments, the built environment encompassing aspects such as lighting, noise, air quality, spatial layout, access to nature, and privacy can significantly impact a patient's psychological well-being, stress levels, and overall recovery trajectory (Ungar &Theron, 2020). This is especially pertinent for long-term inpatients, whose extended exposure to the hospital setting can either exacerbate or alleviate psychological distress. Since 1991, Ulrich's theory of supportive design posits that healthcare environments can foster better outcomes by supporting three fundamental psychological needs (Hagerup et al.,2024): a sense of control (e.g., over lighting, temperature, and social interaction), access to social support (e.g., through spaces that facilitate visits from family), and access to positive distractions (e.g., views of nature, art, or sunlight) (Ulrich, 1991; Ungar &Theron, 2020). When these needs are met, the environment can reduce stress and promote healing; when they are not, it can contribute to feelings of helplessness, loneliness, anxiety, and depression. Walch et al. (2005) have shown that rooms with sunlight and views of nature can lead to reduced pain medication use and shorter hospital stays. Conversely, environments characterised by high noise levels, a lack of privacy, and poor lighting have been linked to an increased incidence of delirium, sleep disturbances, and elevated stress hormone levels among inpatients (Fountain et al., 2021). However, this evidence base is disproportionately derived from Western, high-income countries. Their application in low-resource settings, particularly in regions grappling with complex humanitarian crises, remains severely underexplored. The Democratic Republic of Congo (DRC), especially the Eastern region of South Kivu, represents a critical context for such an investigation. Decades of conflict, systemic poverty, and a strained healthcare system create a scenario where the physical hospital environment is often severely compromised (Kimbrough et al., 2022). Overcrowding, limited sanitation facilities, inconsistent power and water supply, and

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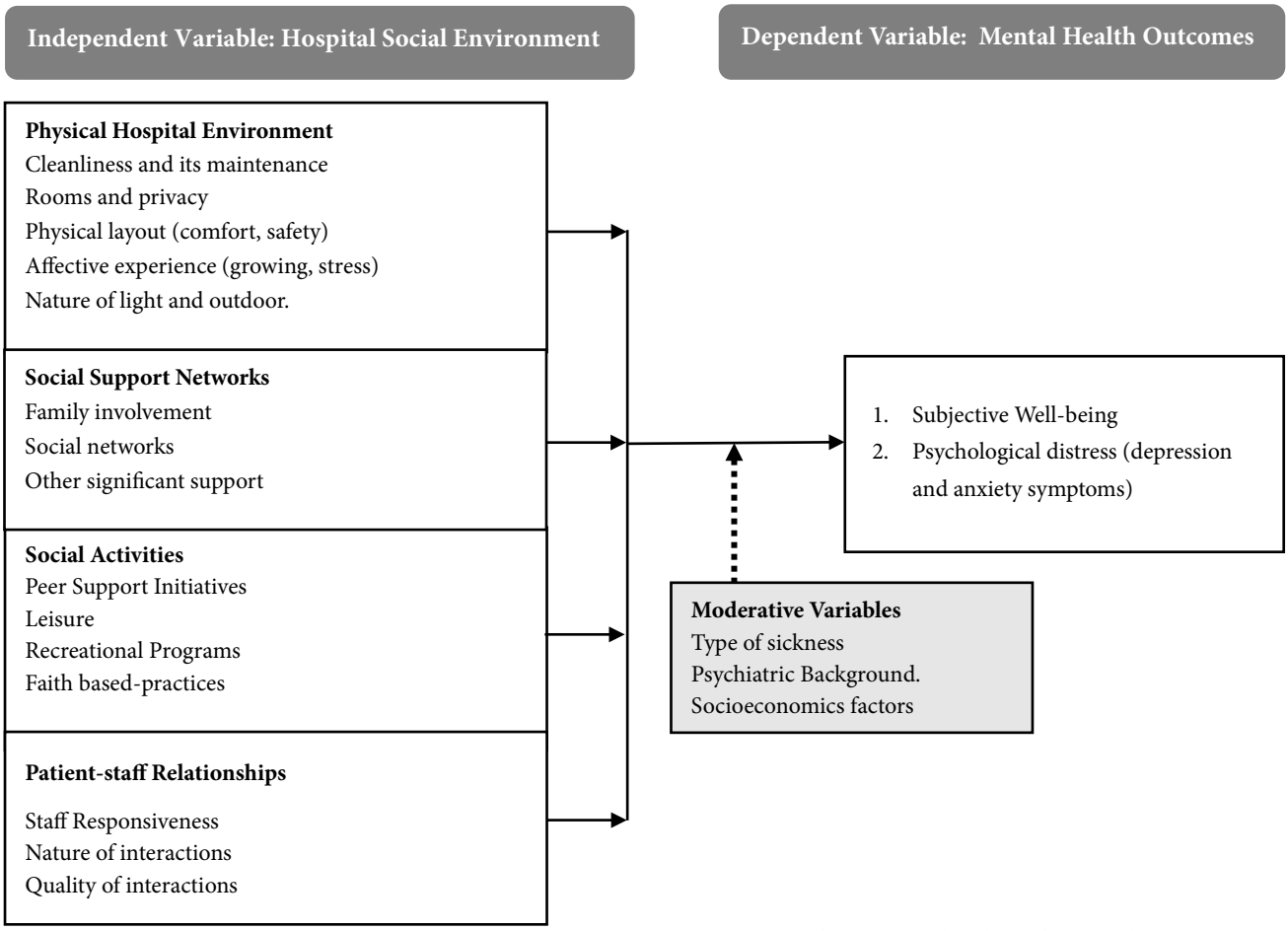
infrastructural decay are common challenges that can profoundly affect the patient experience.

Panzi General Referral Hospital in Bukavu is a flagship institution in this region, renowned for its holistic care model, particularly for survivors of sexual and gender-based violence (Mukwege & Nangini, 2009; Kasherwa et al., 2023). Apart from survivors of sexual violence, the Panzi General Referral Hospital serves as a referral health care institution for several local and other communities.

The hospital serves a patient population with high rates of trauma and complex psychological needs. For long-term inpatients at Panzi, including those recovering from complex surgeries, chronic illnesses, or trauma-related conditions, the physical hospital environment is not a passive backdrop but an active and constant component of their therapeutic journey. Understanding how this environment interacts with their mental health is not merely an academic exercise but a crucial step towards improving the quality and efficacy of care in a setting where resources are scarce and the stakes for recovery are exceptionally high. Therefore, this study seeks to bridge a significant gap in the literature by examining the specific evidence from Panzi General Referral Hospital on the relationship between the physical hospital environment and the mental health outcomes of its long-term inpatients.

Figure 1: Conceptual Framework

This study was developed from a systematic master's thesis study focusing on four variables, as shown below:



The above concept framework shows the relationship between the Independent Variable (HSE) and the Dependent Variable (MHO). The figure proposes a holistic and multidimensional view of the social hospital environment, which is not limited to simple interactions between people.

HSE represents the hospital's physical environment, the social support networks, patients' participation in social activities within the hospital setting, staff-patient relationship. MHO encompasses both positive (Subjective well-being) and negative (Psychological distress) aspects. MHO was measured using the World Health Organization subjective well-being index (WHO-5) for assessing positive mental health and Kessler Psychological distress (K10) for assessing negative mental health through indicators such, positive affect, overall mood, anxiety and depression symptoms. The hospital social environment is presented as a dynamic ecosystem where the physical environment, human relationships, and structured activities intertwine to create a holistic patient experience. In this context, the Physical Hospital Environment is an integral component of the hospital's social environment. This means that the walls, light, layout and cleanliness are not neutral. They play an active role in facilitating or hindering social interactions and psychological well-being. For example, a private or shared room allows for confidential conversations with the family, building social support and contributing to mental health outcomes. Conversely, an overcrowded and noisy space (Affective experience - crowding) can generate stress and inhibit interactions between patients, harming social activities and well-being. Improving the mental health of long-term patients is not enough to focus solely on medication or individual therapy. It is essential to act in an integrated way on the design of spaces (light, privacy, calm, shared spaces), the training staff in caring and responsive communication, the promotion of various social and support activities, and support for the role of families. It is this combination that creates a real "therapeutic social environment" capable of promoting well-being and reducing psychological

distress. In this article, the focus is on the hospital's physical environment to understand the influence of the latter on mental health outcomes and especially its influence on all the variables that make up the hospital's social environment.

METHODOLOGY

This section delineates the research design, target population, sampling techniques, data collection instruments, analytical procedures, and ethical considerations.

Research design and philosophy

Grounded in a pragmatic research philosophy (Kelly & Cordeiro, 2020), this study conceptualizes social reality as a construct of both objective and subjective experiences. It interrogates the value and meaning of data by examining its practical consequences (Morgan, 2014b). A mixed-methods approach, specifically a Convergent Parallel Design, was employed to capture the complexity of the research problem (Dawadi et al., 2021). This design facilitated the simultaneous collection of quantitative and qualitative datasets (Dawadi, 2021; Schlunegger et al., 2024).

Quantitative data were used to measure outcomes via standardized instruments, while qualitative data identified emergent themes and patterns. This approach enabled a holistic exploration, bridging measurable outcomes with human experience. Triangulation was achieved through a three-step process: rigorous concurrent data collection, separate analysis of each dataset, and strategic integration of the findings. Merging the datasets provided thorough insight into the research problem and allowed findings from one method to corroborate those from the other (Creswell and Plano Clark, 2018, as cited in Dawadi et al., 2021). This methodology was selected to address the theoretical question concerning the correlation between social environments and mental health outcomes (MHO) among long-term patients (LTPs).

Study settings

The study was conducted at Panzi General Referral Hospital (PGRH) in the Eastern Democratic Republic of Congo. PGRH is internationally recognized for its excellence in providing rehabilitative care for survivors of wartime sexual violence (SVS) and the local communities through a holistic model that offers a range of free services (Kasherwa et al., 2023). The hospital provides diverse medical care through numerous departments, including gynaecology, internal medicine, surgery, and psychiatry. For this research, the Gynaecology, Surgery, and Internal Medicine departments served as data collection sites. These units were selected because they typically involve longer patient stays, providing a rich context for examining the social dynamics and environmental factors influencing mental health outcomes.

Sample and Sampling Techniques

Given the dynamic hospital setting and ongoing armed conflict during the data collection period, a total of 84 participants were recruited. The sample consisted of 60 LTPs, 7 doctors, 7 nurses, and 10 relatives of patients. A census sampling method was used to recruit all eligible LTPs from the three selected units. Healthcare professionals and patients' relatives were selected randomly to ensure representation across the target population. All selected LTPs had been hospitalized for a period exceeding two weeks.

Data collection instruments

Data were collected using a combination of surveys and semi-structured interviews. The survey incorporated standardized instruments, including the WHO-5 Well-Being Index to assess subjective well-being, the K10 scale to measure psychological distress, and a questionnaire to evaluate the perceived hospital social environment (HSE). The WHO-5 index comprises five items that provide a brief, non-intrusive assessment of subjective well-being, while the K10 includes ten items to screen for symptoms of depression and anxiety. Both tools use a Likert-scale format and are well-validated measures frequently utilized in clinical and research contexts for assessing mental health outcomes (Kessler et al., 2003; Lundquist & Rose, 2002; Topp et al., 2015; Nijhuis, 2017).

Qualitative data were gathered through semi-structured interviews with healthcare providers, patients' relatives, and a subset of LTPs. The interview process involved three phases: initial exploratory interviews, in-depth interviews, and a final validation stage where preliminary findings were discussed with participants to enhance credibility.

Data Analysis Procedures

Quantitative data were analyzed using a Structural Equation Modelling (SEM) framework, which is suitable for modelling complex relationships between directly observed and latent variables (**Elston et al., 2012; Hair et al., 2021**). The analysis proceeded in three stages: (1) data screening and error checking, (2) model specification, and (3) the generation of descriptive and inferential statistics, including correlation and regression analyses.

Qualitative data were analyzed using thematic content analysis, following the systematic steps outlined by Braun and Clarke (2006): (1) transcription of interviews, (2) translation and initial coding of the data, (3) identification and grouping of themes, (4) data checking and cleaning, (5) iterative analysis and adjustment of themes, and (6) final interpretation of the findings in relation to the study's theoretical framework.

Ethical considerations of the study

This research requires an authorization letter from the faculty of social sciences and development studies at the catholic university of East Africa. Before beginning data collection, the study protocol was approved by the Interdisciplinary Centre of Ethical Research (CIRE) of Université Evangelique en Afrique, under Ref: CNES 026/UEA/322/2025. Respondents were informed about the study's objectives and purpose, as approved and reviewed by the above institutional Boards. Respondents consent before surveys or interviews, after ensuring their anonymity, voluntary participation, confidentiality, and freedom to leave the study at any moment. Data collection procedure was done in a way that respects patients' emotions, feelings, and employed a neutral and understanding tone. All the research activities at any level were carried out in accordance with the Declaration of Helsinki.

Data Availability

Data are available upon reasonable request to the corresponding author.

Funding

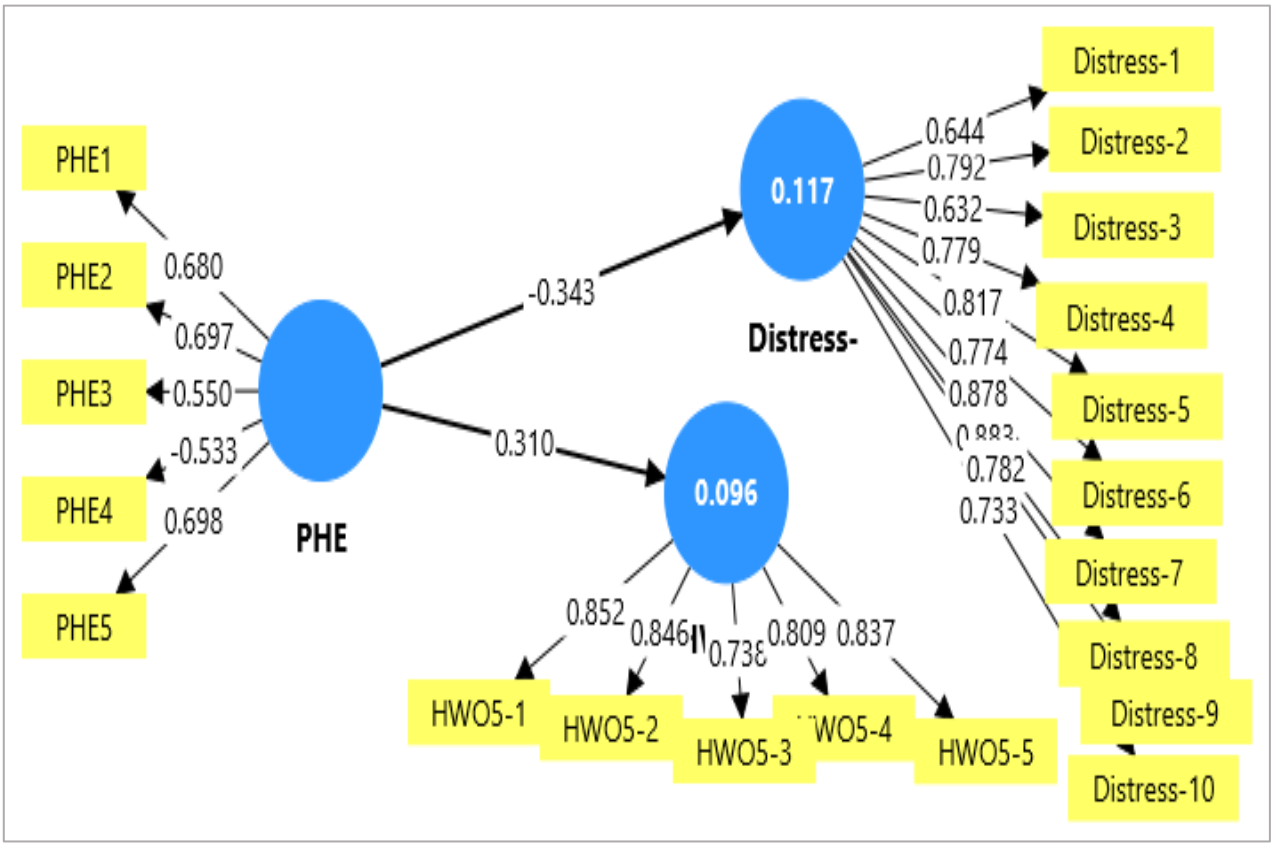
The authors acknowledge the Université Evangelique en Afrique for its manifold support to this work, which was graciously funded through the project A-COD 2023-0035 on improving research and teaching quality, funded by Bro für die Welt.

Results

Findings focus on the effect of the LTPs' physical hospital environment (PHE) on MHO. More specifically, it is a question of examining the influence of the LTPs' PHE on MH. The analysis is confirmatory, as it used a theoretical framework to operationalize certain constructs, such as MH, measured in two main dimensions, namely subjective well-being (WHO-5) and psychological distress (Distress or K10). Figure 1 illustrates, on the one hand, the arrows linking the indicators to their constructs

(measurement model or loading factors) and, on the other hand, the relationships between these constructs (structural model), thus reflecting the system of simultaneous equations estimated by the model.

Figure 1: Factor loadings of PHE and Mental Health Outcomes



Confirmatory factor analysis shows that MH has two dimensions (positive and negative), namely HWO-5 and Distress or K10. The factor loads of the items relating to these two components are relatively higher than 0.70, except for Distress1 and Distress2 (0.644 and 0.632), which have values <0.70. These values, although somewhat low, remain acceptable, with the overall indices of convergent validity and composite reliability remaining largely satisfactory. For the "distress" dimension, the composite reliability reaches 0.96, and the AVE is 0.601, thus confirming the robustness of the concept and its ability to explain more than 60% of the variance of its indicators. Similarly, for the HWO-5 dimension, the composite reliability indices (0.89) and AVE indices (0.66) indicate high convergent validity and adequate reliability. These results suggest that the measurement of mental health through these two components is generally robust.

In contrast, for the PHE component, the factor loadings of the items are all less than 0.70, and the convergent validity is below the critical threshold of 0.50. The AVE indices for PHE are 0.404, indicating poor reliability. However, the composite reliability index remains satisfactory, which testifies to a certain internal consistency of the items. In other words, if the reliability is correct, the validity is problematic and justifies a revision of the indicators or the introduction of new variables to better understand the perceived quality of the hospital environment.

The SEM analysis shows that PHE has a negative, non-significant effect on psychological distress (β=−0.343, p=0.016). Meaning, a 1% improvement in PHE translates into a 0.343% reduction in patient distress. Meaning, better infrastructure conditions and good hygiene quality or adequate lighting, noise reduction or a better-equipped space are more appreciated by long-term patients, but this does not help to reduce anxiety and depressive symptoms. At the same time, PHE has a positive, non-significant effect on WHO-5 (β=0.310, P=0.003). This simply translates into the fact that PHE provides comfort, safety, satisfaction and confidence to patients over the long term without having an impact on their WHO-5. In practice, the perception of PHE by patients and professionals is positive, meaning that the PGRH Physical environment is clean, secure, ventilated and with favourable hygienic conditions. However, this is not enough, long-term patients perceive this environment as inappropriate for a non-sick person, as this environment is comparable to prison, one is deprived of several freedoms, as expressed in the comments from the interviews in the following terms:

"[…] You can't feel good in a hospital, this is almost a prison, the experiences here are stressful, it's better to leave and go home" (Patient 8, gynaecology department),

"Staying in the hospital for a long time is a stressful experience. You are continually exposed to contamination and traumatic experiences, while no care is given on the other side" (Patient 4, Internal Medicine).

Figure out, staying more than 5 months here, it's traumatic that you can't imagine...? Seeing all these people dying, fighting to survive, here is not a good place for a healthy person (Health Professional). Beyond the physical aspects of the hospital, it is the experiences that are considered less favourable to life and the impact on the perceived PHE.

Looking at the correlation of HPE on mental health outcomes, the results indicate that better perception is weakly related to a smaller reduction in psychological distress, with r = -0.286 (p = 0.027) non-significant. Nor does good perception contribute to increasing WHO-5. This suggests that the physical conditions of the hospital environment are good, but do not have a positive impact on LTPs' MHO.

Table 1: Factor analysis of PHE and MHO (path coefficient, SEM)

Relation	*Coefficient*	*Standard Deviation*	*T.stat.*	*P-value*	
PHE → Distress	-0.343	-0.399	0.142	0.016	
PHE→WHO-5	0.310	0.320	0.204	.545	
WHO-5→Distress	-0.258				
	R-square	**R^2 adjusted**	**f^2**	**Correlation Spearman's rho**	**Sign. 2-tailed**
PHE→ Distress	0.117	0.102	0.133	-.286*	.027
PHE→WHO-5	0.096	0.080	0.106	.080	.545

It should be noted that the coefficients estimated in SEM were interpreted from Figure 1. The coefficients of determination (R^2)[1] observed are relatively weak. This does not mean, however, that the model is inadequate, as human behaviours are often complex in the social sciences and the phenomena studied can be influenced by a multitude of contextual factors. It is that the PHE is meaningless to solve mental issues from the patient's perspective. In the context of this research, this weakness may be explained by the small sample size (N=60). In addition, the F^2 (effect size)[2] was used to assess the contribution of the PHE variable to the "mental health". According to Cohen (1988), the interpretation of f^2 is as follows: 1) F^2=0.02, which means "weak effect"; 2) F^2=0.15, moderate effect and 3) F^2=0.35 means high effect. In the context of our analysis, the evaluation of f^2 reveals that the PHE (F^2=0.133) variable expresses a moderate effect on distress. And a weak influence on WHO-5 (F^2=0.106). Suggesting that, although the influence of PHE is not predominant, this latent variable plays a significant role in explaining fluctuations in distress and subjective well-being of long-term patients. The results from qualitative data confirm the above evidence through the following table, which summarizes the main ideas from the respondents' interviews.

Table 2: Long-term patients, PHE and mental health outcomes

Dominant's themes	*Major ideas*	*Given reasons*
Proper and safe	Consistent cleaning and hygiene, security of mobility inside,	Regular cleaning and appropriate security
Specialised Care and	Professional care	They care and healing come
Precarious Conditions	Overcrowding ("communal wards"), lack of privacy (especially for women).	Although security and regular cleaning, no comfort in the hospital.
Carceral effects	Feeling like a prisoner, restricted mobility outside, and a privacy deficit.	Increase stress
Daily trauma	Exposure to death, noise and chronic stress	Regular movement in rooms
Inadequate mental health care	Lack of recreational spaces, distracting activities (e.g., activity areas for adults).	Any given care in regards mental health, Patients are left behind.

Source: Field data, 2025

While this is a positive perception of PHE, interview data demonstrated that patients perceived the physical environment as proper and safe but also precarious, particularly in wards where beds were overcrowded, lack of privacy, noise and chronic stress, and inadequate mental health care. Emphasising the role of a continuous health care facility to guarantee long-term patient dignity requires more consideration.

Table 3: Reliability and validity

	Cronbach's alpha	*Composite reliability (rho a)*	*Composite reliability (rho_c)*	*Average variance extracted (AVE)*
Distress	0.927	0.963	0.937	0.601
WHO-5	0.882	0.894	0.910	0.668
PHE	0.551	0.741	0.795	0.404

The above table presents the results related to the reliability and validity of the measurement indicators in this study. The results indicate that all indicators have a high Cronbach's alpha (α), indicating a good internal consistency. Specifically, for the distress variable, α=0.927, excellent reliability. The composite reliability coefficient (CR) is 0.963, and the extracted mean variance (AVE) is 0.601, thus confirming satisfactory convergent validity. For the WHO-5, α=0.882 and its composite reliability coefficient (CR) of 0.894, with an AVE of 0.668, confirming a good reliability and validity of the indicators. For the PHE construct,

1 The R^2 represents the proportion of the variance of the dependent variable that is explained by the independent variable(s) SEM. It tells how "good" the model is to predict the mental health outcomes.

2 The f^2 is a measure of effect size that indicates the importance of the concrete impact of an independent variable on a dependent variable, beyond mere statistical significance.

α=0.551 (moderate reliability). The CR = 0.741 remains acceptable, but the AVE = 0.404, below the recommended threshold of 0.5, suggests a potential convergent validity issue. Thus, the measures relating to distress and WHO-5 are robust and reliable, while those related to HPE have somewhat low convergent.

Table 4: Model fit

	Saturated model	*Estimated model*
SRMR	0.092	0.099
d_ULS	1.783	2.075
d_G	0.939	0.945
Chi-square	262.815	264.026
NFI	0.663	0.662

The results of the saturated model and the estimated model indicate that the model has an acceptable overall fit: the SRMR (Standardised Root Mean Square Residual) is 0.099 for the estimated model, slightly higher than 0.08. This suggests an acceptable adjustment, but one that could be improved. The distances D_ULS (saturated model, the index is 1.783 while the estimated model is 2.075) and D_G (the index of the saturated model) are 0.939, and that of the estimated model is 0.945, indicating that the divergence between the observed matrix and the reproduced matrix remains small. The chi-square (of the saturated model is 262.815, and that of the estimated model is 264.026) remains close between the saturated model and the estimated model, indicating that the estimated model correctly reproduces the observed covariance. The NFI (Normed Fit Index) of 0.662 suggests a moderate fit, below the conventional threshold of 0.90. These indices show that the estimated model reproduces the data well overall, but that some adjustments could improve the quality of the fit.

Table 5: Fornell-Larcker criterion

	Distress-	**WHO-5-**	**PHE**
Distress-	0.776		
WHO-5-	-0.258	0.818	
PHE	-0.343	0.310	0.636

The Fornell-Larcker criterion is used to evaluate the discriminant validity of latent constructs: a construct must share more variance with its own indicators (square root of the AVE) than with the other constructs. Diagonal values (Distress=0.776; WHO−5=0.818; HPE=0.636 corresponding to the square root of the AVE of each construct. The off-diagonal values represent the correlations between the different constructs. For each construct, the square root of the AVE is therefore greater than its correlations with the other constructs, which confirms satisfactory discriminant validity. Admittedly, the variable Distress=0.776 is correlated with WO−5 to −0.258 and WHO−5 with −0.343, i.e., values less than 0.776, which is consistent with the criterion. It is concluded that the three concepts Distress, WHO-5, and HPE are quite distinct from each other, and the indicators correctly measure their respective concepts.

Discussion

The HPE has a moderate but statistically non-significant influence on K10 (β = -0.343, p = 0.016) and WHO-5 (β = 0.310, p = 0.003). The convergent validity is low (AVE = 0.404), and feedback from participants indicates feelings of confinement and stress. These findings align with Smith, Brown, and Taylor (2021) and Khan, Abbas, and Ali (2020), who point out that the quality of the HPE, including cleanliness, lighting, and privacy, plays a role in how people perceive their WHO-5. Though the lack of significance in the result was due mostly to the unique situation of financial detention and prolonged stays, where the LTP perceived the HPE more like a prison, overshadowing the usual positive effects (Mbeleko, Mapendo & Shindano, 2023). Moreover, the low convergent validity hints that the HPE construct might need a rethink of its indicators, especially to better capture contextual factors (Davis & Harris, 2019). This aligns with the idea that clean, peaceful HPE, providing privacy, access to natural light and views of nature, helps to reduce stress, improve sleep, and alleviate pain (Ulrich, 1984). In contrast Ulrich et al., (2008), discovered that a positive perception of HPE was associated with a statistically significant yet weak-to-moderate impact on mental health outcomes. Specifically, the HPE was linked to lower distress and higher well-being, but the effect sizes were modest (f^2 = 0.133 and 0.106, respectively), and the construct itself showed poor convergent validity (AVE = 0.404). This gap is compellingly illustrated by the qualitative data. Patients described the environment as having "carceral effects" and as a place of "daily trauma," resonating with Goffman's (1961) idea of total institutions, where strict structures and a loss of autonomy can harm MH. Maben et al., (2020) confirm that for LTP, losing autonomy, personal identity, and ties to the outside world can make even a seemingly adequate environment feel psychologically oppressive. The declaration that "you can't feel good in a hospital; it's almost like a prison" emphasizes that just being physically adequate isn't enough. This finding challenges a strictly positivist perspective on physical design and aligns with the idea that the meaning and experience of a space, like feelings of confinement, lack of privacy, and exposure to suffering can overshadow its objective physical attributes (Devlin & Arnelli, 2003). Thus, while a clean and safe environment is essential, but by itself it doesn't create a therapeutic landscape for LTP. The results presented provide a detailed and intricate perspective on what influences MH among LTP, highlighting differences in how HPE plays a role. These insights both support and challenge current research, especially while the HPE is seen as satisfactory (clean and safe), it has a limited and non-significant effect on MHO. This finding is crucial and aligns with a growing body of research that goes beyond a strictly evidence-based design approach. This concept remains relevant in today's healthcare sociology (Brown, Spartalis & Whitehead, 2020). This helps explain the surprising finding of good physical conditions alongside poor MHO. The HPE serves as a hygiene factor, and its absence may lead to significant dissatisfaction; its presence alone doesn't guarantee well-being; it merely prevents extreme distress (Hignett, Lu & Fray, 2019). The low convergent validity of the HPE construct (AVE = 0.404) suggests that current methods for assessing the "environment" might not adequately capture essential experiential elements like perceived freedom and dignity (Morandi, Lucchi, & Guerini, 2021).

Practical implications of the study's findings

The mental health outcomes (MHO) of long-term inpatients (LTPs) are influenced by a complex interplay of factors, ranging from the immediate hospital social environment to broader contextual challenges in the Democratic Republic of Congo, such as poverty, conflict, and health policy limitations. This study confirms that within this fragile context, an integrated approach to care is not merely beneficial but essential. Thus, the core conclusion of this study proposed the need for an integrated model. The study findings demonstrate that while a functional hospital physical environment (HPE) is necessary to mitigate psychological distress, it is insufficient to promote subjective well-being. Therefore, Panzi General Referral Hospital (PGRH) must move beyond a purely medical or custodial model of care. As a critical first step, PGRH should conduct a formal audit of the HPE using this study's findings as a benchmark. This will allow for the targeted allocation of resources towards high-impact renovations and policies. By systematically integrating these social work, environmental, and recreational factors, PGRH can transform

from a place of treatment into a genuine healing environment, effectively improving the mental health outcomes of its most vulnerable LTPs. Strategic planning should adopt a holistic, biopsychosocial framework that integrates medical, environmental, and socio-relational components, treating patient mental health with the same importance as physical health. To operationalize this shift, the following three interventions, grounded directly in the study's evidence, are proposed:

1. Redesign the physical environment for dignity and respite

This needs to retrofit rooms and layout in order to mitigate the negative "carceral effects" and lack of privacy identified. For example, install curtains or partitions between beds; create quiet rooms or accessible garden spaces for respite; improve access to natural light and personal storage. These changes provide patients with control, dignity, and crucial relief from clinical trauma.

2. Implement structured psychosocial and cultural programming

This passes through an establishment of scheduled, non-medical programs to actively foster well-being and social connection. For instance, PGRH should introduce regular cultural activities (e.g., music, storytelling), arts and crafts, and light physiotherapy-led group exercises. These distractive activities are vital for reducing isolation, fostering a sense of community (ubuntu), and re-establishing a connection to normalcy, particularly for vulnerable or socially isolated LTPs.

3. Foster a therapeutic social environment through design and practice

Intentionally design spaces and train staff to support positive social interaction. This may pass through design "sharing layouts" in common areas to encourage peer support. Complement this with training for healthcare providers on trauma-informed care, empowering them to become active agents in a therapeutic environment rather than just medical caregivers.

4. Shift in budgeting and hospital management priorities

The hospital leadership should create separate budget lines for psychosocial and environmental well-being that would explicitly cover amenities, activity programs, and minor renovations aimed at improving patient experience, and not just patient safety.

Conclusion

The results of this study highlight the complex impact of the HSE on the LTPs' mental health outcomes, leading to a nuanced conclusion: the hospital's physical environment (HPE) acts as a foundational hygiene factor in the LTPs' mental health, but not a transformative one. Meaning a clean, safe, and functionally adequate HPE is demonstrably necessary to prevent or reduce psychological distress, serving as a critical baseline. However, it is fundamentally insufficient to foster positive subjective well-being or comfort. The objective quality of the HPE is often overshadowed by contextual and experiential factors. These factors are a lack of privacy, absence of basic amenities, the carceral or institutional feel of the wards, and the daily exposure to the trauma of others creates a "ceiling effect." Thus, no matter how clean or safe the environment is, these psychosocial stressors prevent it from contributing positively to LTPs' subjective well-being. Therefore, the mental health outcomes of LTPs cannot be understood through the lens of the physical environment alone; they are deeply embedded in a complex interplay of physical, social, and psychological factors. These conclusions reinforce, complement and nuance the findings of the international literature in this field. To move beyond merely mitigating distress and toward actively promoting well-being, the study proposed a formal environment audit based on this study's findings, the implementation of a holistic, biopsychosocial care model, redesign for dignity and normalcy, integration of structured psychosocial and distractive activities, and finally fostering a therapeutic social environment.

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