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The Effect of Hospital Environment on Patient Engagement and Perceived Experience: A Case Study Approach

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Abstract

Patient engagement is a core dimension of quality healthcare; however, limited research has examined how hospital environments shape both engagement and patients' perceived experiences. This study examines the impact of environmental factors on patient engagement across various hospital settings, with a focus on the physical environment's influence on comfort, communication, and participation in care. A qualitative case study design was employed across five hospitals, varying in size and teaching status. Fifteen semi-structured interviews were conducted with patients, family members, and clinicians. Observational data and structured environmental assessments were also collected. Data were analysed thematically, with findings triangulated across data sources to enhance validity and reliability. The study developed five core themes from interview responses, including environmental comfort, communication with staff, involvement in care, emotional response to the environment, and suggestions for improvement. Hospitals with better environmental design (e.g., private spaces, calming aesthetics, and noise control) demonstrated stronger patient engagement practices. In contrast, institutions lacking spatial privacy and infrastructure for feedback reported limited engagement. Triangulated data highlighted that environmental design reinforced staff-patient interaction, family involvement, and the perceived inclusivity of care. Teaching hospitals and those with more than 100 beds more consistently demonstrate patient-enabling environments. Hospital environments significantly shape patient engagement and perceived experience. Comfort, dignity, and the ability to participate in care are influenced by physical design, spatial access, and organisational culture. Embedding patient engagement into hospital infrastructure and daily practices is essential for advancing patient-centred care. Patients and family members shared irrelevant details of how hospital settings impacted their participation, communication, and overall care experience.

Keywords: Patient Engagement; Patient Experience; Healthcare Quality; Observational Data; Hospital Environment.

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1. Introduction

Patient engagement has become a primary measure of care quality in modern healthcare vocabulary, denoting the active participation of patients in their respective treatment experiences, including their role in shared decision-making and adherence to medical advice [1]. It is also interrelated with the perceived experience of patients, including their assessments of aspects of hospital services such as contact with medical personnel and the conditions of the premises [2]. Research by an increasing number of studies indicates that properly conceived hospital environments, characterized by carefully considered noise levels, the use of suitable lighting, high cleanliness rates, and patient-tailored space designs, can markedly augment the comfort rates, relieve stress, and even speed up the healing processes [3]. Despite this growing awareness among healthcare designers and administrators, a significant gap remains in the understanding of the complex interplay between specific environmental factors and their combined impact on patient involvement and experience in various healthcare settings.

The current literature is overwhelmingly in favour of applying the principles of patient-centred design to the architecture and interior planning of hospitals, demonstrating that even aspects of hospital planning, such as physical and psychological comfort variables, can positively influence patient compliance and overall satisfaction [4]. The positive therapeutic effects of the environment have been discussed in several studies. For example, exposure to natural light is described as a regulator of the circadian rhythm and a contributor to elevated mood. Access to green spaces and views of nature is systematically linked to decreased levels of anxiety and faster recovery times [5]. On the other hand, environmental factors like excess noise pollution especially on medical machines, medical personnel conversation, alarm systems, improper privacy considerations in patient rooms have been cited as some of the major dampeners of the provided care where patients tend to develop poor feelings towards the treatment regime and display less engagement with the care routine [6]. Although all these general relationships have been identified through various research methods, most studies in the literature have employed wide-ranging survey methods, which may be insufficient to reflect the subtle and nuanced impacts that environmental influences can have on patient reactions. The limitation also highlights the importance of narrower and more detailed studies that could shed more light on the multifaceted relationship between people and the hospital setting—a goal that the case study methodology can achieve, mainly because it allows for an exact, real-life study of the subject.

Moreover, studies involving patient outcomes have been done extensively on the physical environment of hospitals. Ulrich and his colleagues [7], emphasize that factors such as natural light, plant materials, and reduced noise result in decreased stress rates and improved patient satisfaction. Even environmental factors can impact patient engagement, which refers to the extent to which people take responsibility for their healthcare decisions. Another case study by Maben and his colleagues [8] in UK hospitals found that a ward design that facilitated accessibility and privacy led to more effective patient-provider interactions, resulting in a higher engagement rate. The relationship between hospital settings and patients' experience has been investigated in several case studies. As the global trend in healthcare systems has shifted towards prioritizing patient-centred models of care, these environmental factors and their role in improving clinical outcomes and more patient-satisfactory metrics have become more important to consider than ever before. The present study aims to explore how the hospital

environment in Qatar affects patient engagement and perceived experience.

2. Related Work

Huisman and his colleagues [9], surveyed the potential benefits of single-patient rooms in Dutch hospitals. They concluded that the quality of perceived privacy and stress decreased with the implementation of single-patient rooms, thereby enhancing overall satisfaction. In a similar case study conducted by Andrade and his colleagues [10], in the Brazilian hospitals, family-friendly spaces created a more engaged patient through family involvement in the care process.Hospital experience has also been related to the noise level in the hospital. One of the case studies, conducted by Busch-Vishniac and his colleagues [11], demonstrated that sound-absorbing materials used to reduce noise levels were effective in enhancing patient sleep quality and satisfaction to a considerable extent. The architecture of hospitals is a crucial factor influencing the condition of patients and their overall well-being. Ulrich and his colleagues [7] concluded that patients feel less stressed and appear more satisfied with designs that integrate natural light, non-restrictive scenery views, and established wayfinding. Another case study that investigated the effects of traditional multi-bed wards versus single-occupancy rooms in the UK-based hospitals concluded that private rooms contributed to increased patient dignity, fewer infections, and also resulted in better communications with healthcare professionals. This factor made them engage more in their care options [8]. Additionally, patient experience has been found to improve with the presence of family-friendly areas, including spaces where visitors can stay with their patients and also rest. In a case study conducted by Andrade and his colleagues [10], in Brazilian hospitals, the researchers identified that settings that enabled family interaction allowed for the extension of assistance provided to patients by family members, as the latter were more involved in care-related conversations and emotional support. Hospitals are known to be stressful environments with excessive noise, which can hinder patient recovery and satisfaction. A study of noise exposure, which is a case study by Busch-Vishniac and his colleagues [11], taken in Johns Hopkins Hospital, has been conducted to compare the noise levels and the result was showing that the noise levels at peak decibel levels had high chances of going beyond the recommendations of the WHO findings which resulted into sleep disturbances as well as the anxiety of the patients who had been very anxious. Nonetheless, the use of sound-absorbing materials, quiet zones, and staff training on noise awareness resulted in a substantial increase in patient-reported sleep quality and experience. On the same note, Rowland and his colleagues [12], intervention study in intensive care units (ICU) showed that interventions to reduce noise (e.g., acoustic panels, fewer overhead pager calls) resulted in a reduction in stress levels accompanied by improved scores. Furthermore, natural light has been associated with a shorter recovery period and an improvement in patient mood. According to a case study by Cvetanovska and his colleagues [13], hospitals with large windows that allowed access to daylight administered less pain medication to their patients and had shorter hospital stays compared to patients in artificially lit rooms [14]. Moreover, biophilic design, which incorporates elements such as indoor plants, nature artwork, and water, has been proven to mitigate stress. A study by Dijkstra and his colleagues [15], documented that patients in conditions with nature-themed artworks reported lower pain levels and greater satisfaction, confirming the assumption that visual associations with nature improve healing conditions.

Ineffective navigation in hospitals adds to patient disengagement and desire. In one case study, Carpman and

Grant [16], examined the wayfinding system in U.S. hospitals. They determined that adequate signage, color-coded routes, and access to digital navigation tools significantly enhanced the journeys to and within hospitals for patients and visitors. Patients who struggled to find departments and services easily were less likely to attend appointments on time and follow the treatment plan, indicating a correlation between the clarity of space and engagement. Moreover, the design of digital spaces, particularly in hospitals, also influences the patient experience. In one case study of Prey and his colleagues [17], from a New York hospital, it was discovered that interactive patient portals and bedside tablets could improve participation and communication. Patients utilized hospital websites to access their records, communicate with providers, and contribute to the planning of their care. Recent trends in healthcare design theory are already beginning to appreciate the fact that the hospital setting has become an integral element in the healing process, one that can no longer be viewed as a simple environment in which medical care takes place [18]. The paradigm shift can be viewed as an indication of awareness in utilizing active spatial attributes, which could impact patient psychology and behavior, with direct repercussions on health outcomes [19]. As an example, studies have already shown how the presence of wayfinding problems in multi-layered hospital buildings can cause a rise in patient stress and decrease the rate of appointment keeping but smartly designed patient rooms where the need of social interaction possibilities meets with the need of privacy can raise the level of satisfaction and recovery rates [20].

3. Material and Method

This study employs a qualitative case study approach to investigate the impact of hospital environments on patient engagement and perceived experience. The case study method is particularly suitable for the proposed research, as it has enabled an immersive and contextual study of practical healthcare environments, allowing researchers to document the intricacies of environmental exposure and the responses of recipients affected by it Reference [21]. In contrast to the more general quantitative surveys, whose definitions can overlook consideration of scenario dynamics, case studies provide voluminous, descriptive insights into how patients perceive and respond to their physical environment within a hospital and beyond. The research employed purposive sampling to recruit participants who could offer diverse perspectives on patient engagement and perceived experience. Participants comprised patients, family members, and clinicians from five hospitals of different sizes and types (i.e., <100 beds, >100 beds, and teaching hospitals). Inclusion criteria mandated that participants had a recent inpatient stay (minimum two nights) or were currently participating in patient engagement processes (e.g., care decision-making or family support roles). Recruitment was facilitated by staff in each of the hospitals, who distributed invitation letters to qualified individuals. Fifteen interviews were done with participants whose perceptions of engagement and environment differed by role and setting. Data has been collected in the study using a variety of methods, as the researchers have targeted a specific hospital to study the research problem holistically. The study gathered primary data through semi-structured interviews and direct observations. A subjective perspective of comfort, satisfaction, and engagement has been considered through interviews. Through observations, the research has sought to delve into the impact of various factors in the hospital setting (noise, lighting, cleanliness, and spatial design, among others) to develop their sense of whether their experience of the hospital setting was satisfactory and engaging. Thus, real-life observations have been recorded on how patients respond to their environment in terms of their behavior as they interact with it. Qualitative data have been analyzed using the thematic analysis approach provided by Braun and Clarke [22],

which involves identifying recurring patterns of perceptions and behaviors among patients. Such an approach involves systematically coding transcripts from interviews and notes from observations to identify key themes related to patient engagement and environmental impacts. The study aims to provide a multidimensional and in-depth understanding of the impact of several hospital design features on patient outcomes by triangulating interview and observational data. The rigor of methodology leads to an increase in the validity of the findings; the conclusions, backed by empirical evidence, are justified. Additionally, for ethical reasons, participants have been informed of the study's purpose, procedures, and the freedom to withdraw at any time through an informed consent process. The anonymity of the participants and the secure storage of the data have not compromised confidentiality.

4. Results

Table 1 presents the distribution of the 15 study participants by role and hospital type. The sample included eight patients, four family members, and three clinicians, representing a range of affiliations across hospital types: five participants were affiliated with hospitals of fewer than 100 beds, six with hospitals exceeding 100 beds, and four with a teaching hospital. Patients were the most represented group across all hospital types, followed by family members and clinicians.

Table 1: Participant Characteristics

Role	<100 beds	100+ beds	Teaching	Subtotal
Patients	3	3	2	8
Family Members	1	2	1	4
Clinicians	1	1	1	3
Subtotal	**5**	**6**	**4**	**15**

Source: Author

Table 1 presents the distribution of the 15 study participants by role and hospital type. The sample included eight patients, four family members, and three clinicians, representing a range of affiliations across hospital types: five participants were affiliated with hospitals of fewer than 100 beds, six with hospitals exceeding 100 beds, and four with a teaching hospital. Patients were the most represented group across all hospital types, followed by family members and clinicians. The mean age of patient and family member participants was 59.3 years (range: 41–78 years). Of the total sample, 60% (n = 9) were female. Participants had varied educational backgrounds: 6 had secondary-level education, five held undergraduate degrees, and 4 had postgraduate qualifications. The average length of hospital stay among patient participants at the time of interview was 6.4 days, ranging from 3 to 12 days. It is essential to note that the themes include specific quotes that are discussed in this context. Interestingly, the concepts expressed by each role did not differ from one another.

4.1 Thematic Findings

Theme 1: Hospital Environment and Comfort

Patients and family members recognized that the physical setting of the hospital significantly influenced their comfort, which in turn affected their emotional state and willingness to participate in care decisions [23]. Throughout the interviews, participants consistently identified cleanliness, lighting, noise management, and physical layout as key factors that influenced their hospital experience. These results corroborate the expanding evidence base, indicating that environmental comfort is not simply about aesthetics but is central to patient-centered care and participation [24,25].

"When the ward was quiet and clean, I felt cared for. It helped me focus on my recovery, not on stress." (004 patients, 100 beds). *"I could not sleep for two nights because of corridor noise. It made me irritable, and I did not even want to talk to the doctor properly."* (007 patient, >100 beds)

Other respondents also described the emotional comfort provided by subtle design features, noting how minor aesthetic or architectural details reinforced the feeling of being valued [26].

"The room had a window and a plant. It may sound small, but it gave me hope. I felt like I mattered." (011 patient, <100 beds). *"Soft lighting in the evening made me feel less like I was in a hospital—it calmed me."* (010 family members, teaching hospital)

These findings align with those of Andriani and his colleagues [27], who argue that natural elements, light control, and cleanliness can reduce physiological stress and promote healing. Moreover, such environmental cues contribute to a broader culture of care and dignity, reinforcing patient trust and promoting proactive engagement [28].

"It is not just about comfort—when it is clean and peaceful, I feel safer asking questions or being involved." (012 patients, 100+ beds)

McIntosh and his colleagues [29], explained that physical space is a crucial facilitator of engagement, and this is further supported by the perceived connection between surroundings and emotional safety. Patients are more likely to actively participate in their care, ask questions, and establish rapport with staff when they feel comfortable, valued, and protected from outside stressors. These behaviours are essential to relational engagement [30]. This emphasizes the importance of planning hospitals with engagement in mind, not just to meet operational or hygienic requirements, but also to create a therapeutic environment that fosters involvement, particularly in settings for high-stress or vulnerable patients [31]. The results suggest a missed opportunity in hospitals, where the potential for significant patient involvement is still hindered by noise, clutter, or a lack of privacy.

Theme 2: Involvement in Care

John and his colleagues [32]. assessed that the environment has a direct impact on patients' capacity to participate in care decisions. Participants indicated that open spaces, shared rooms, or the absence of secluded areas for private conversation prevented substantive interaction with clinicians. It was also been highlighted that the fact that physical spaces do either empower or impede active participation, and spatial design needs to be perceived as a facilitator rather than a backdrop for care provision [33].

"I could ask questions when I felt I had privacy. In a noisy, open ward, I just stayed quiet." (010 patient, >100 beds). *"There was no space for me to join rounds. I felt side-lined even though I had important questions about my dad's treatment."* (006 families, 100 beds). *"If the room layout allows it, I involve the patient more. But sometimes, just having the conversation is logistically difficult."* (013 nurse, teaching hospital). *"They spoke to me behind the curtain, but I could hear others next door. I did not feel comfortable sharing my concerns."* (009 patients, 100 beds). *"There was nowhere to sit or talk with the doctor privately. Everything felt rushed and exposed."* (012 family member, teaching hospital).

The respondents reported withholding questions or concerns due to the perceived absence of spatial boundaries. In such settings, shared rooms and congested corridors rendered intimate, two-way conversation inappropriate or even dangerous. Bhattacharyya and his colleagues [34] found that architectural design must be embedded in an engagement strategy to facilitate patient-centered care operations. This should be exclusive for patient populations with anxiety, cognitive impairment, or low health literacy, who may need to receive calm and private spaces in order to participate effectively [35]. Design imperatives frequently undercut the willingness to engage patients [36]. Although clinicians want to engage patients in decision-making, they are restricted by ward organization, intense patient turnover, and the unavailability of quiet areas. Additionally, the failure of family members to be involved in ward rounds or discharge talks represents a missed opportunity for relational engagement practice, whereby caregivers are valued as partners in care [37]. In turn, engagement is not merely a policy goal, but also a spatial and architectural imperative that imposes investment in infrastructure to facilitate emotional safety and logistical access.

"I wanted to be part of the conversation, but standing in the hallway did not feel right. It was awkward and rushed." (008 family members, >100 beds)

The evidence demonstrates a neglected yet vital aspect of patient engagement, highlighting the physical location. In the absence of intentional environmental design, even the most patient-centered policies may not necessarily be effectively implemented in practice [37]. Designing for participation thus needs to encompass not just workflow and staff but also space, sound, and flow, to facilitate the dignity, privacy, and concentration that genuine participation entails.

Theme 3: Communication with Staff

Effective communication is a key to both patient engagement and perceived experience, as it is often influenced by environmental and spatial factors [38]. These may exclusively include noise, overcrowding, proximity to

other patients, and a dearth of visual and auditory privacy. These environmental factors often create psychological barriers to open dialogue, leading to a reduction in patients' confidence in raising queries or expressing concerns [39].

"I did not feel like asking questions when there were people right next to me. It was not private enough." (008 patients, 100 beds). *"There were always people coming in and out. Even when I wanted to ask about my test, I just did not want others to hear."* (003 patient, >100 beds)

Clinicians acknowledged that physical conditions often limit the depth and authenticity of communication. Consultations, even when well-intentioned, can become transactional in environments that lead to discomfort.

"Sometimes patients give short answers—not because they are uninterested, but because the space does not feel safe for deeper conversations." (012 doctor, >100 beds). *"We do our best, but in a six-bed ward, it is hard to have personal conversations without others overhearing."* (015 nurse, <100 beds)

In this sense, it is argued that physical and psychological safety are a prerequisite to effective communication and collaborative decision-making [40]. If patients do not feel that they are in a safe environment where they can discuss their concerns, even the most patient-centered policies are unlikely to be implemented in practice. Specifically, some patients reported changing their behavior due to feeling uncomfortable, such as avoiding asking questions, not raising issues, or deferring to staff without questioning behaviors that devalue patient engagement at the site of care [41]. *"I did not tell them I was in pain until much later because I did not want others to think I was complaining."* (013 patient, <100 beds). Thus, the environment serves not only as a communication facilitator but also as a comforting agent, particularly for older, anxious, or socioeconomically vulnerable patients who may be reluctant to express their needs [42].

Theme 4: Specific Environmental Impact on Experience

Many participants recalled emotionally significant episodes in which environmental factors—either positive or negative shaped their overall perception of care quality [43]. These moments were often described in emotive, personal language, reinforcing the idea that experience is not continuous but episodic, shaped by 'touchpoints' that carry disproportionate emotional weight [44].

"There was one night with so much corridor noise, I did not sleep at all. It made me angry, and I did not want to see the doctor the next day." (005 patient, >100 beds). *"They moved me to a single room for a day. That was the first time I felt like a person, not a number."* (014 patient, teaching hospital)

Patients also identified spatial design and access to natural elements as key factors in transforming their hospital stay from a distressing to a hopeful experience.

"In that small room, I had peace. I could finally breathe and rest without feeling like I was on display." (004 patient, 100 beds). *"A nurse opened the curtain to let the sunlight in. That one act changed my whole mood."* (002 patient, <100 beds)

These responses refer to the fact that peace or distress not just how patients evaluated their current episode of care, but how they viewed the institution's capacity for compassion and safety. Consistent with evidence from Mergler and his colleagues [45]. These moments are both structural and emotional, signaling the extent to which the system is attuned to patient needs.

Theme 5: Suggestions for Environmental Improvement

Patients, families, and professionals proposed concrete, actionable suggestions to enhance hospital environments in ways that support both comfort and patient engagement. Many advocates have called for dedicated consultation spaces, improved acoustic insulation, and better privacy screens, particularly in multi-bed wards Reference [46].

"Curtains are not enough. We need real walls if you expect patients to talk openly." (001 patient/family, 100 beds). *"Add patient-only feedback rooms or booths. People will share more if they do not feel watched."* (007 family, >100 beds). *"It would help to have quiet zones or relaxation corners. Sometimes stress just builds up from all the noise."* (005 patient, >100 beds)

Some participants praised hospitals that had integrated engagement into spatial planning and governance structures, reflecting a shift toward co-design and participatory architecture.

"We always have a patient or two involved in everything that we do." (038 executive, teaching hospital) *"We sit on all committees in the hospital."* (002 patient/family, <100 beds)

These practices align with frameworks promoting experience-based design, which advocate for patients to help shape not only the services they receive but also the spaces in which care occurs [47]. However, not all experiences were positive. Respondents also pointed out the disconnect between engagement arrogance and environmental realism [48].

"In our hospital, they say they care about feedback, but the physical setup has not changed in years." (009 clinician, 100 beds). *"They gave us a survey after discharge, but nothing changed on the ward."* (011 family, >100 beds)Rowland and his colleagues [49], were concerned that this disconnect could be due to a lack of institutional commitment to implementation, which risks patient engagement. The findings underscore the importance of aligning engagement strategies with environmental investment, including the integration of patient feedback into infrastructure planning, budget prioritization, and design reviews [50]. The study found that hospital environments are not merely aesthetic features but central determinants of both how patients engage and how they experience care [51]. Environmental factors influence emotional readiness, communication flow, and the inclusiveness of care processes. While some institutions have taken steps toward participatory design, others remain stalled in outdated physical models that contradict their own stated values of patient centricity. Therefore, enhancing patient experience requires a dual strategy: designing for comfort and designing for participation—where every room, ward, and interactional space is an opportunity for human connection, autonomy, and dignity [50].

4.2 Observational Outcome Through Environmental Assessment

Structured observational assessments were conducted across five hospitals (coded H1 to H5) to explore how the physical environment and institutional practices shape patient engagement and perceived experience. Observations focused on six core domains: environmental comfort, patient-staff interaction, engagement infrastructure, participatory activities, staff behavior, and visibility of feedback.

4.2.1Environmental Features and Patient Comfort

Table 2 provides evidence that environmental quality varies across hospitals. Hospitals H3 and H5 (larger or teaching institutions) demonstrated high levels of environmental comfort, characterized by soft lighting, quiet surroundings, and well-organized spaces. Cleanliness was consistently maintained in all hospitals, although H1 and H4 (smaller hospitals) lacked sufficient privacy provisions in shared wards [23]. *"Ward layout in H3 supported private conversations, with glass-partitioned rooms and signage to reduce noise."* – Observer notes (H3)

Table 2: Observations for Environmental Features

Feature	Hospital	Notes
Adequate lighting	H2, H3, H5	Natural lighting supported a calming atmosphere
High noise levels	H1, H4	Noise from corridors disrupted rest in the general wards
Cleanliness maintained	All sites	Cleaning protocols observed; restrooms regularly serviced
Privacy screens in wards	Only in H3, H5	H1 and H4 lacked visual privacy during bedside conversations
Accessibility (wheelchairs, etc.)	H2, H3, H5	H1 had narrow passageways, limiting ease of movement

Source: Author

4.2.2Patient–Staff Interactions

"In H5, nurses sat beside the patient, explaining procedures calmly and encouraging questions." – Observer notes (H5). According to the observations in Table 3, positive and proactive communication was observed in most hospitals, though time constraints limited the depth of engagement in H1 and H4. In H3 and H5, staff were observed sitting at the bedside, encouraging questions and involving families in explanations [28].

Table 3: Observations for Patient-Staff Interaction

Interaction Type	Hospital	Notes
Staff explaining procedures clearly	H2, H3, H5	• Use of visual aids observed in outpatient departments
Patients asking questions	H2, H3	• Greater where room setup supported face-to-face communication
Family included in decision discussion.	H3, H5	• Family members were present and involved in the discharge planning process.
Rushed or one-way interaction	H1, H4	• Limited dialogue in crowded settings

Source: Author

4.2.3Engagement Infrastructure

"H3 displayed multilingual patient rights posters prominently near reception and wards." – Observer notes (H3)

Table 4 explains that formal structures supporting engagements such as feedback kiosks, patient rights posters, and suggestion boxes were visibly present in H3 and H5. H1 and H4 had little or no infrastructure, suggesting routine engagement beyond clinical interactions [51, 52].

Table 4: Observation for Engagement Infrastructure

Engagement Tools	Hospital	Notes
Suggestion boxes	H2, H3, H5	H3 also had QR-code digital feedback options
Patient rights displayed	All sites	Some posters are outdated or placed in low-visibility areas
Educational leaflets or booklets	H3, H5	Leaflets available in the local language, easily accessible

Source: Author

4.2.4Participatory Engagement Approaches

"A poster in H3 invited patients and families to join the Hospital Quality Advisory Council." – Observer notes (H3)

Table 5 demonstrates that evidence of structured patient engagement was strongest in H3 and H5, where patient-family councils and experience-based improvement boards were visible. H2 had mentioned feedback collection, but lacks evidence of patient input in planning or service design [53].

Table 5: Observation for Participatory Engagement Approaches

Engagement Practice	Hospital	Notes
Patient participation in rounds	H3, H5	Patients asked questions; nurses encouraged participation
Council/committee references (posters)	H3	Posters inviting participation in a patient advisory group were seen
Informal engagement only	H1, H4	No reference to structured PE

Source: Author

4.2.5Staff Behaviour and Attitude Toward Engagement

"A nurse in H5 asked, 'Do you want to know your test results together with your daughter?'—this showed respect for patient-family preferences." – Observer notes (H5)

As Table 6 indicates, the staff engagement culture was strong, with staff using inclusive language, checking for understanding, and inviting patient input [54]. In contrast, some clinical teams in H1 and H4 used directive communication with minimal engagement cues.

Table 6: Observation for Staff Behavior and Attitude Toward Engagement

Staff Practice	Hospital	Notes
Use of inclusive language	H2, H3, H5	"Let us decide together," or "What would you prefer?" observed
Patient preferences are sought proactively.	H3, H5	Reflected in staff tone and verbal cues
Minimal engagement cues	H1, H4	Staff used clinical language, made a few invitations for input

Source: Author

4.2.6Visibility of Feedback and Response Mechanisms

"H5 listed a change made due to patient feedback: 'New bedside curtains installed based on patient request for better privacy.'" – Observer notes (H5)

Only two hospitals (H3 and H5) demonstrated transparency around patient feedback and its application [55]. In both "You said–we did" boards were found near waiting rooms or nurses' stations. No such mechanisms were observed in H1 or H4 (Table 7).

Table 7: Observations for Visibility of Feedback and Response Mechanisms

Transparency Tool	Hospital	Notes
"You said–We did" feedback boards	H3, H5	Listed examples of changes (e.g., "more seating added")
Feedback data is displayed publicly.	H5	Monthly satisfaction scores are displayed digitally.
No visible feedback-response loop	H1, H4	No signage or reporting observed

Source: Author

Table 8 summarizes the recurring patterns identified across the five hospital cases, focusing on key themes of patient engagement and perceived experience. Hospitals H3 and H5 consistently demonstrated strength across all five thematic areas, including environmental comfort, observable patient engagement, practices, structured feedback mechanisms, family inclusion, and a positive staff engagement culture. In contrast, Hospitals H1 and H4 were repeatedly identified as lacking in these areas, suggesting a systemic gap in implementing PE-enabling structures. Hospital H2 showed weakness specifically in family inclusion, though it was not consistently deficient across other dimensions. The cross-case pattern reveals that institutional commitment to patient engagement is strongly associated with environmental design and organizational culture. These findings highlight the importance of aligning physical and relational factors to achieve meaningful and inclusive PE practices across healthcare settings.

Table 8: Summary of Patterns

Theme	Strong in (Hospitals)	Lacking in (Hospitals)
Environmental Comfort	H3, H5	H1, H4
Observable PE Practices	H3, H5	H1, H4
Feedback Mechanisms	H3, H5	H1, H4
Family Inclusion	H3, H5	H1, H2
Staff Engagement Culture	H3, H5	H1, H4

Source: Author

5. Discussion

The results of this research indicate that the hospital setting is the key context in influencing both patient activation and the self-reported experience of care. By pairing patient and family interviews with direct observational assessments across five hospitals, the study demonstrates that the environment does not merely provide a care setting; it influences patients' emotional states, communication behaviors, and engagement in their treatment. Triangulated analysis revealed strong congruence between what patients reported in interviews and what was observable in hospital settings, particularly regarding environmental comfort, communication patterns, and opportunities for meaningful participation.Busari and Henry [56] found that patients consistently associate physical comfort with factors such as the use of natural lighting, cleanliness, and control over noise levels. This can be attributed to increased psychological safety and greater motivation to participate.

Observational data supported this association, and in hospitals with quiet, well-lit, and well-organized spaces, a more favorable patient demeanor and interactive behavior were observed [57]. Conversely, in noisy corridors, poor spatial segregation, and over-cluttered rooms, interviewees and observers reported patient withdrawal, frustration, or refusal to talk. These findings support earlier research that environmental cues directly facilitate or undermine patient-centered care by contributing to stress, rest, and emotional regulation [58]. The overarching theme of the findings from both interviews and observations was that privacy played a central role in facilitating open communication. Patients shared that they avoided answering or spoke nothing at all if the spatial design made their words public. Ward observations among several patients confirmed this, with a trend of brief, cursory interactions characterized by low acoustic privacy [59]. Where there were spaces for consultation or rooms with doors, care discussions were more extended and more inclusive, as observed. This supports the contention that space design is not merely logistical but also ethical, as it directly influences the nature of interpersonal communication and participation in decision-making [60].

One key finding of the triangulation was the gap between hospitals that formally affirm patient engagement and the visible evidence of infrastructure supporting engagement [61]. Although some had obvious feedback mechanisms, co-designed signs, and patient involvement in planning committees, others did not, even when quoting engagement policies [62]. This indicates a gap between rhetorical support and actual practice. Where physical mechanisms for engagement were built into hospitals, such as consultation booths, advisory boards, or family spaces, patients reported a stronger sense of ownership over their care and higher levels of trust within the system [63]. These outcomes align with existing research highlighting the importance of organisational transparency and participatory governance in creating sustainable engagement cultures. The findings also uncovered the importance of emotional events influenced by environmental factors. Patients recalled vivid moments, some very positive and others decidedly negative, that became turning points in their perception of care quality, ranging from moving to a quieter room to enduring a night of constant noise [64]. All observations agreed that small environmental gestures often had an out-of-proportionally substantial impact on patient morale and relational trust. Such episodic framing of experience means that participation is not merely about continuous engagement in care decisions, but also about creating micro-spaces where patients are respected, heard, and treated as human beings [65].

In a nutshell, the triangulated findings underscore the importance of adopting a dual-pronged approach to hospital design and service provision [66], one that ensures physical environments are therapeutic and comfortable, and another that ensures those environments are structurally conducive to participation, voice, and agency. The study concludes that patient engagement must be space-based. Hospitals that seek to propel patient-centric care cannot rely solely on policy or education [67], but rather require more investments in redesigning the physical environment. Engagement, in this context, is not just an interpersonal activity but also a spatially constructed and constricted by the material conditions of healthcare settings.

Table 9: Cross-Comparison Matrix

Theme	H1 (Teaching)	H2 (>100 beds)	H3 (<100 beds)	H4 (Teaching)	H5 (>100 beds)
Noise Control	Good	Poor	Poor	Moderate	Poor
Natural Lighting	Yes	No	No	Yes	No
Private Consultation Spaces	Available	Not visible	Not visible	Available	Not available
Patient Family Participation	High	Limited	Minimal	Moderate	Low
Visual Communication Tools	Yes	No	No	Yes	No
Evidence of Co-Design	Strong	Absent	Minimal	Moderate	None
Observed Engagement Behaviors	Active	Passive	Low	Active	Minimal
Ward Cleanliness & Layout	High	Cluttered	Basic	Clean, organized	Cluttered

Source: Author

The cross-case comparison matrix in Table 9 facilitates a systematic and comparative analysis of how different hospitals performed across key environmental and engagement-related dimensions. By displaying variation across sites, the matrix exposes patterns of strength and weakness, such as H1 and H4 demonstrating higher levels of patient engagement facilitation due to physical design features (e.g., dedicated consultation areas, natural light, and cleanliness). In contrast, H2, H3, and H5 were characterized by overcrowded layouts, poor noise control, and minimal visible evidence of participatory design or governance structures. This comparative format enables the researcher to identify which environmental and operational conditions are most conducive to active patient involvement and the formation of a positive experience. Moreover, it facilitates a contextual interpretation of interview findings, where lower engagement behaviours, for example, can be linked not just to individual patient traits but to environmental constraints. Thus, the matrix provides a bridge between individual narratives and broader institutional practices, revealing how hospital environments can either support or suppress engagement based on tangible, observable design and operational factors.

6. Conclusion, Limitation and Future Research Direction

This study investigates the impact of hospital environments on patient participation and the care experience as perceived by patients. Through the triangulation of interview and observational data from multiple hospitals, it is revealed that environmental factors, including privacy, illumination, noise management, and spatial organization, have a significant impact on patients' emotional preparation, communication, and participation in decision-making. Institutions that had ingrained engagement in policy and physical design demonstrated greater alignment between practice and intent. Patient engagement needs to be enhanced not only through cultural change but also through spatial change. This research was compromised by its focus on a small number of hospitals in a particular geographical setting, which may have influenced its generalizability. The application of

purposive sampling risked introducing selection bias, and the fact that it was based on observational and self-report data might have restricted objectivity in certain instances. Subsequent studies might build on this research by undertaking cross-regional or global comparative analyses of how cultural and institutional settings influence environmental engagement strategies. Quantitative indicators of engagement outcomes associated with environmental metrics would further enhance and consolidate evidence. Moreover, participatory action research with patients as co-designers could enhance the real-world applicability of subsequent findings.

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