Rethinking Sustainability in Healthcare: A Qualitative Exploration of Socio-Cultural, Environmental, and Economic Values in a Green Hospital Transformation

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Abstract

The implementation of the Green Hospital concept is a critical effort to reduce the environmental impact of the healthcare sector. This study aims to explore how environmental, socio-cultural, and economic values are implemented at hospital as part of efforts to enhance service quality toward sustainable healthcare delivery. Using a qualitative approach and a constructivist paradigm, data were collected through in-depth interviews, participatory observation, and document analysis. Research participants included healthcare workers, patients, hospital management, and surrounding community members. Preliminary findings indicate that environmentally friendly practices are still perceived in technical terms by most staff, while community members emphasize comfort and safety aspects. The integration of socio-cultural values in service delivery was found to be a crucial factor in enhancing stakeholder satisfaction. This study proposes a stakeholder experience-based conceptual model to support a more contextual and participatory Green Hospital implementation strategy.

Keywords: *Green Hospital, Healthcare Services, Stakeholder Participation, Socio-Cultural Values, Qualitative Study.*

Introduction

Hospitals play a vital role in safeguarding and improving public health. However, alongside their core function, hospitals are also significant contributors to environmental pollution (Borges de Oliveira et al., 2021). High energy consumption, medical waste production, and greenhouse gas emissions are among the primary environmental challenges associated with hospital operations. To address these issues, the Green Hospital concept has emerged as a strategic approach to integrate sustainability principles into hospital management (Kumari & Saini, 2022). This concept emphasizes resource efficiency and the reduction of negative environmental impacts.

The Green Hospital framework extends beyond technical efficiency measures such as energy saving and waste management. It also encompasses social and cultural considerations in its implementation. In the context of public service delivery, community acceptance and the involvement of various stakeholders are key success factors (AL-Tabtabae & Harbi, 2022). Each hospital operates within a unique socio-cultural environment, with local values, norms, and customs shaping perceptions of healthcare and environmental policies. Therefore, the application of Green Hospital principles must be adapted to local socio-cultural characteristics

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(Ebekozien et al., 2022). A socially sensitive approach enhances both the effectiveness and sustainability of green programs.

Most prior studies on Green Hospitals have focused on technical and quantitative evaluations, such as energy efficiency, emission reduction, and operational cost savings. However, the qualitative aspects—such as meaning, lived experience, and stakeholder participation—have often been overlooked. Stakeholder perceptions and experiences, including those of healthcare workers, patients, and communities, play a vital role in the success of environmental policies in hospitals (Lee & Lee, 2022). A deeper understanding of their perspectives is essential to identify supporting and inhibiting factors in Green Hospital implementation. Therefore, a qualitative approach is crucial for comprehensively explaining these phenomena.

The implementation of the Green Hospital model is fundamentally a complex and multidimensional transformation process (Hayati et al., 2025). Its success is not solely determined by the availability of technology or formal policies but also by the active involvement of diverse stakeholders. Healthcare professionals must possess sufficient understanding and a positive attitude toward sustainability principles (Verdonck & Verniers, 2024). Patients and nearby communities should be given opportunities to participate so they feel a sense of ownership and are motivated to support hospital programs. Thus, the success of a Green Hospital depends on the synergy among environmental, socio-cultural, and economic dimensions.

This study aims to explore how stakeholders' understanding and experiences of the Green Hospital concept are formed and evolve within a local context. The central focus is on how socio-cultural and economic values influence perceptions of environmentally based service quality. A qualitative method was employed to deeply investigate the meanings constructed by stakeholders regarding Green Hospital practices. Data were collected through in-depth interviews, field observations, and internal policy document analysis. The findings of this study are expected to offer implementable recommendations for the development of a sustainable and participatory Green Hospital model.

Literatur Review

The concept of Green Hospital has emerged as a strategic response to the growing environmental impact of healthcare facilities. Studies have shown that hospitals are significant contributors to environmental degradation due to high energy consumption, medical waste, and greenhouse gas emissions (Takata et al., 2013). The Green Hospital model aims to minimize these impacts by integrating sustainability principles into hospital design, operations, and service delivery (Vallée, 2024). According to the World Health Organization, sustainable hospitals should prioritize energy efficiency, water conservation, and eco-friendly waste management. These efforts are intended not only to reduce environmental harm but also to promote a healthier environment for patients and staff.

From a service quality perspective, scholars emphasize the role of environmental conditions in shaping patient satisfaction and clinical outcomes. Shajahan et al., (2019) highlight that indoor air quality, noise levels, and lighting in hospital settings significantly influence recovery rates and patient experiences. Moreover, service quality is often evaluated based on five key dimensions: tangibility, reliability, responsiveness, assurance, and empathy (Parasuraman et al., 2008). In the context of Green Hospital, these dimensions intersect with environmental performance, such as the availability of green spaces, clean water, and natural lighting. Thus,

service quality becomes a critical mediator between sustainable practices and stakeholder satisfaction (Tushar et al., 2023).

The socio-cultural dimension also plays a crucial role in Green Hospital implementation. Cultural norms and community values can affect how stakeholders perceive and respond to environmental programs in healthcare settings (Anåker & Peri, 2014). For instance, some communities may resist recycling or public transport initiatives if they conflict with local habits or expectations. Therefore, the incorporation of local wisdom, inclusive communication, and respect for social diversity are vital for the success of green initiatives. As such, sustainable healthcare must go beyond technical solutions and address the socio-cultural context in which hospitals operate (Hussain et al., 2024).

Economically, Green Hospitals are expected to optimize operational efficiency while maintaining high standards of care. Investments in green infrastructure, such as solar panels, digital medical records, and waste-to-energy systems, are associated with long-term cost savings (Szklo et al., 2004). However, the high initial capital required remains a barrier for many institutions, especially in developing countries. Financial strategies such as cross-subsidies, public-private partnerships, and green financing have been proposed to support sustainability transitions in the healthcare sector (Priyan et al., 2024). Economic sustainability is essential not only for institutional survival but also for maintaining equitable access to quality care (Efani et al., 2024).

Although various studies have examined the technical and policy aspects of Green Hospital development, there is a lack of qualitative research exploring stakeholders' lived experiences and perceptions (Sánchez et al., 2019). Most existing studies rely on quantitative models to evaluate the effectiveness of green practices, leaving the social meanings and contextual challenges underexplored. A qualitative approach is needed to capture the nuanced ways in which stakeholders interpret and engage with sustainability initiatives. This includes understanding their motivations, resistance, and suggestions for improvement. By filling this gap, future research can contribute to more grounded and culturally adaptive models of Green Hospital implementation.

Research Methodology

Research Design

This study adopts a qualitative research design rooted in the constructivist paradigm, which emphasizes the subjective meanings constructed by individuals in specific social contexts. The research aims to explore how various stakeholders—medical staff, patients, and community members—perceive and interpret the implementation of Green Hospital principles. Qualitative research is particularly appropriate for investigating the nuances of human experiences and institutional dynamics that cannot be captured through numerical data. Through an interpretive lens, this study seeks to uncover the socio-cultural, environmental, and economic factors shaping the transformation of a hospital toward sustainability. The research follows a single-case embedded design to provide an in-depth and contextual understanding of the implementation process within a selected hospital.

Research Site

The study was conducted at a general hospital located in Malang, East Java, Indonesia, referred to here as RSU Brimedika. The hospital is a mid-sized private healthcare facility that has

initiated efforts to implement sustainability principles through the Green Hospital framework. These efforts include installing energy-efficient lighting, managing medical and non-medical waste, promoting environmental awareness, and improving the overall quality of hospital services. The choice of this site was based on the hospital's explicit commitment to environmental sustainability and its accessibility for field research. The diversity of stakeholders within and around the hospital environment provided a rich context for qualitative inquiry.

Data Collection Techniques

Three primary techniques were used to gather data: in-depth interviews, participatory observation, and document analysis. Semi-structured interviews were conducted with 15 participants selected through purposive sampling. Informants included hospital managers, doctors, nurses, janitors, patients, and community members living near the hospital. The interviews focused on stakeholders' understanding of the Green Hospital concept, their involvement in sustainable practices, and their experiences with hospital services. Observations were conducted in hospital wards, outpatient units, administrative offices, and waste processing areas to examine daily practices and the integration of sustainability into operations. Relevant documents, such as sustainability policies, environmental education materials, and internal memos, were collected to triangulate the findings.

Sampling Strategy

A purposive sampling strategy was employed to ensure the inclusion of information-rich participants with diverse roles and perspectives. The sample aimed to represent different stakeholder categories relevant to Green Hospital implementation: internal (medical staff, administrators, support staff) and external (patients, families, and community residents). Participants were selected based on their knowledge, direct involvement, or experience with hospital services and sustainability initiatives. Sampling continued until data saturation was achieved, indicated by the repetition of themes and the absence of new information in subsequent interviews. All participants were informed about the research objectives, and written consent was obtained to ensure ethical compliance.

Data Analysis

Thematic analysis, as outlined by Braun & Clarke (2006), was employed to analyze the qualitative data (Figure 1). The process involved six phases: data familiarization, initial coding, theme identification, theme review, theme definition, and final reporting. Interview transcripts, observation notes, and documents were read repeatedly to immerse the researcher in the data. Initial codes were developed to label relevant segments, which were then clustered into broader themes related to environmental awareness, socio-cultural integration, service quality, and stakeholder engagement. Data analysis was conducted both manually and with the aid of NVivo software to enhance organization and analytical rigor.
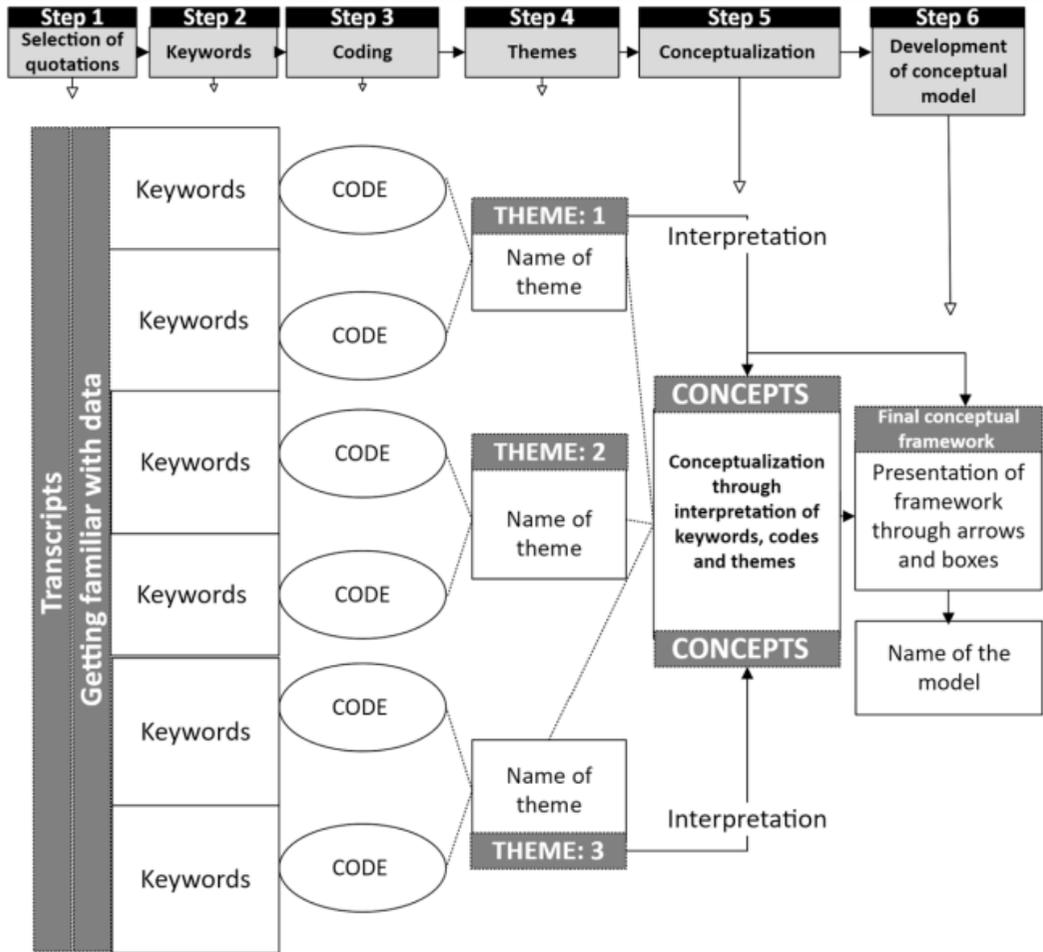
Figure 1. Step in Thematic Analysis

Trustworthiness and Rigor

To ensure the trustworthiness of the findings, the study employed multiple strategies, including data triangulation, member checking, peer debriefing, and thick description. Triangulation across interviews, observations, and documents helped validate emerging patterns and enhance the credibility of the findings (Figure 2). Member checking was conducted by sharing summaries of preliminary interpretations with selected informants to confirm accuracy and relevance. Peer debriefing sessions with fellow researchers provided critical feedback on coding and theme development. Detailed contextual descriptions of the research site, participants, and findings were provided to support transferability and transparency. Ethical approval was obtained prior to data collection, and all data were anonymized to protect participant confidentiality.
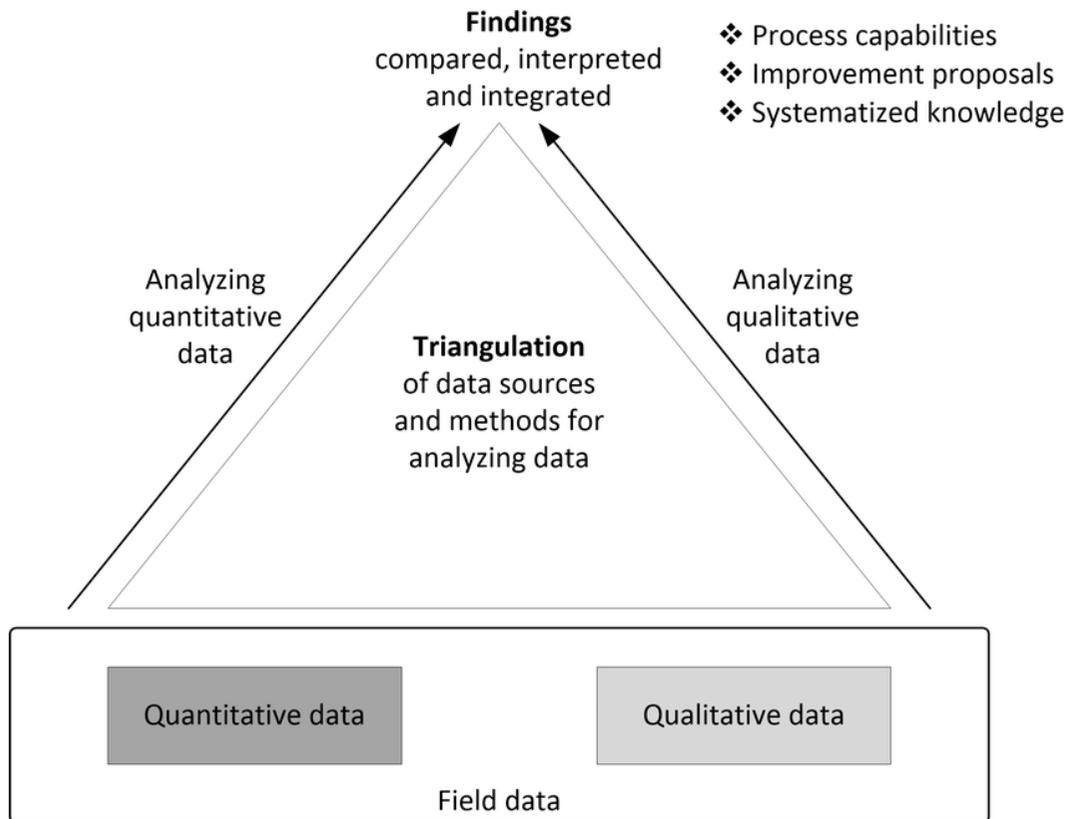
Figure 2. Triangulation Data

Findings and Preliminary Results

The preliminary analysis of this qualitative study revealed three major themes concerning the implementation of the Green Hospital concept. These themes reflect how various stakeholders—especially hospital staff, patients, and community members—understand, interpret, and experience sustainability practices in a hospital setting. The findings suggest that while technical initiatives are present, there are deeper socio-cultural and participatory dimensions that influence perceptions and acceptance. Each theme emerged from repeated patterns in interview transcripts, field observations, and document analysis. These themes are: (1) physical or technical understanding of "green," (2) socio-cultural values as a service bridge, and (3) lack of community involvement.

The first theme, "Green as a Physical Concept," indicates that many healthcare professionals equate the Green Hospital model with technical improvements only. Participants often mentioned elements such as energy-saving LED lighting, air conditioning control, and waste disposal systems as the core of sustainability. These aspects are indeed components of a Green Hospital, yet the broader meaning involving service quality and environmental ethics was rarely acknowledged (Tarkar, 2022). There was little awareness of how sustainable design could enhance patient well-being or operational culture. This limited view demonstrates a gap between policy intention and on-the-ground understanding.

During field observations, it was noted that physical improvements had been implemented in specific areas of the hospital. For instance, waste bins were separated by category, and some rooms featured energy-efficient lights and ventilation systems. However, the staff's daily routines and service delivery practices did not fully reflect environmental values. Green behaviors, such as minimizing resource waste during medical procedures or promoting digital documentation to reduce paper use, were not consistently practiced (Ryan-Fogarty et al., 2016). This suggests that the implementation remains surface-level and not yet embedded in hospital culture.

The second major theme, "Socio-Cultural Values as a Bridge to Service," highlights the importance of cultural sensitivity in shaping patient experiences. Many patients and family members expressed high levels of satisfaction when services acknowledged their local traditions and spiritual needs (Sumardika et al., 2024). Practices such as polite greetings in local dialects, prayer room availability, and respectful handling of religious customs were valued highly. These culturally attuned services enhanced patients' trust in the hospital and contributed to their emotional comfort. Thus, socio-cultural alignment becomes a key factor in perceived service quality.

In interviews with nursing staff and front-desk personnel, the importance of empathy and communication was repeatedly emphasized. Patients were more responsive when nurses took the time to explain procedures in culturally appropriate terms or offered reassurance in familiar language. Conversely, when services felt mechanical or insensitive to personal needs, patients reported dissatisfaction despite technical adequacy. The findings show that cultural dimensions can either strengthen or weaken stakeholder engagement with hospital services. Therefore, the human aspect of sustainability—how people are treated—should not be overlooked in Green Hospital implementation.

The third theme, "Lack of Community Involvement," reflects the disconnection between the hospital and its surrounding social environment. While the hospital has adopted some environmental initiatives internally, local communities have not been fully informed or engaged. Many community members stated they were unaware of the hospital's green programs or the reasons behind certain operational changes. This lack of communication has led to misunderstandings and skepticism about activities such as waste recycling or transportation policies. Some residents viewed these changes as burdensome or unnecessary rather than beneficial.

In one focus group, local residents expressed concern over the hospital's waste management system. Although separate waste collection was implemented, community members were unsure whether it was effectively managed or simply symbolic. Furthermore, programs like using public transport for staff or encouraging patients to walk were not culturally compatible, as most people relied on personal motorcycles. These mismatches between institutional policies and community norms contributed to low participation and resistance. This highlights the need for greater outreach and participatory planning in implementing sustainability efforts.

Another critical insight from the data is that stakeholder participation was largely top-down, with decisions made by hospital management and then communicated to others. This vertical approach limits feedback mechanisms and weakens the sense of ownership among staff and community members. Without meaningful dialogue, many stakeholders feel detached from the green vision the hospital aims to achieve. Participation should involve consultation, co-creation, and responsiveness to local knowledge and preferences. A more inclusive governance model

could improve both the implementation and sustainability of environmental programs (Wood et al., 2016).

Moreover, the preliminary results suggest a hierarchy of stakeholder priorities that do not always align with sustainability goals. For example, patients prioritize timely and compassionate care over environmental design features. Staff members are more focused on workload and efficiency than on reducing ecological footprints. Meanwhile, community members are most concerned with affordability and accessibility, viewing environmental issues as secondary. Recognizing these different priorities is essential for designing sustainable practices that are socially acceptable and meaningful. Sustainability must be contextualized within local realities, not imposed as an external standard.

The early findings indicate that Green Hospital implementation is perceived and practiced unevenly across stakeholder groups. While physical infrastructure improvements are visible, the socio-cultural and participatory components remain underdeveloped. Successful transformation toward a truly sustainable hospital requires addressing these gaps through education, dialogue, and culturally grounded engagement (Mahmoudi et al., 2024). Building a shared understanding of sustainability among all stakeholders is crucial for long-term success. The findings will inform the next stages of analysis, where a contextualized model for participatory and holistic Green Hospital development will be proposed.

Discussion

The findings of this study critically reveal that the implementation of the Green Hospital concept remains heavily skewed toward physical and infrastructural interventions, while neglecting deeper systemic, cultural, and participatory dimensions. Although environmental technologies such as LED lighting and waste separation have been installed, these measures represent only a superficial compliance with sustainability indicators. The predominance of technical framing reflects an instrumental view of sustainability, reducing it to a checklist of facilities rather than embedding it in institutional values and everyday practices. This limited scope fails to recognize that genuine sustainability in healthcare requires behavioral change, cultural sensitivity, and participatory governance. Thus, the hospital's sustainability discourse risks becoming performative rather than transformative.

A critical gap lies in the mismatch between managerial sustainability agendas and the lived experiences of frontline staff and patients. Staff members, while aware of environmental equipment, do not integrate sustainability into their caregiving routines or interpersonal interactions. The absence of green-oriented service protocols—such as paperless administration, resource-saving clinical procedures, or eco-conscious patient education—indicates that sustainability has not been operationalized at the service delivery level. This suggests that the current approach over-relies on technocratic solutions and underestimates the role of organizational culture. Without cultivating environmental awareness and responsibility at the level of individual behaviors, technological installations will have limited systemic impact (Lăzăroiu et al., 2020).

The role of socio-cultural values in healthcare sustainability has also been underemphasized in dominant Green Hospital models. This study demonstrates that patients place high value on empathy, cultural recognition, and respectful communication—elements that are rarely accounted for in standard sustainability frameworks. As Anåker and Peri (2014) argue, culturally sensitive care contributes not only to health equity but also to the broader ethical mandate of

sustainability. When hospitals fail to incorporate local norms and values into their services, they risk alienating patients and undermining trust (Rupiwardani et al., 2022). Therefore, sustainability must be reframed not only as an ecological goal but as a relational practice rooted in context and community.

The neglect of community engagement further illustrates a technocratic bias in Green Hospital planning. Despite the hospital's attempts to implement eco-friendly policies, community members remain unaware or skeptical of such efforts due to poor communication and lack of inclusion. This reflects a top-down governance style that treats sustainability as an internal institutional concern rather than a collective societal project (Mousa & Othman, 2020). The failure to build participatory channels not only weakens the legitimacy of green initiatives but also reduces their long-term viability (Khan et al., 2018). Drawing from Arnstein's ladder of participation, the hospital's approach arguably remains at the level of tokenism, rather than genuine empowerment or collaboration.

Economically, the hospital's focus appears to prioritize cost efficiency and operational streamlining, yet overlooks the social dimensions of sustainability. While resource-saving technologies may yield financial benefits, they are not sufficient if they fail to align with stakeholder priorities such as service quality, dignity, and access (Bello & Abu, 2021). Furthermore, investments in sustainability often require long-term vision and upfront costs—factors that private hospitals may find difficult to justify without immediate returns (Yucesan & Gul, 2020). This tension underscores the need to reconceptualize economic sustainability not as cost-minimization, but as value-generation across ecological, social, and ethical domains. Without this shift, sustainability efforts may be short-lived or perceived as elitist.

From a theoretical standpoint, the findings challenge the prevailing dominance of ecological modernization theory in the hospital sustainability discourse. Ecological modernization assumes that technological innovation and rational planning can decouple economic growth from environmental degradation. However, this study reveals the limitations of such assumptions in contexts where social trust, cultural coherence, and institutional transparency are weak. The Green Hospital model must therefore integrate perspectives from critical environmental justice, which emphasizes inclusivity, voice, and the redistribution of power. Sustainability without justice, participation, and meaning becomes another layer of institutional control rather than a pathway to transformation (Sherman et al., 2020).

Moreover, the study exposes a fundamental tension between universal policy frameworks and local realities. While global guidelines on Green Hospitals offer valuable benchmarks, their implementation must be adapted to specific sociocultural and institutional contexts. The assumption that one-size-fits-all standards can produce equitable outcomes disregards the diversity of stakeholder expectations, institutional capacities, and cultural norms (Pradhananga et al., 2019). This study reinforces the argument for localized models of sustainability, informed by grounded research and participatory design. Green Hospital development should not be an exercise in compliance but a co-evolutionary process between institutions and their communities (Kumari & Saini, 2022).

The implications of these findings are significant for both policy and practice. For policymakers, there is an urgent need to rethink sustainability indicators beyond technical infrastructure and incorporate metrics of cultural responsiveness, stakeholder participation, and ethical care. For practitioners, environmental training should be reframed not as a technical upgrade but as a professional and moral imperative. Moreover, institutional leaders must model sustainability not

only in operations but in their communication, decision-making, and relationship-building with both internal and external stakeholders. Only through this holistic and inclusive approach can hospitals move from superficial compliance to genuine transformation.

Finally, the study invites reflection on how research and evaluation of Green Hospitals are conducted. Quantitative assessments often mask the social frictions and ethical dilemmas involved in implementing sustainability in healthcare. By contrast, qualitative approaches—as employed in this study—can illuminate the contradictions, resistances, and innovations emerging on the ground. Researchers must resist the allure of neat models and engage with the messy, contested, and evolving nature of sustainability in practice. In doing so, the future of Green Hospitals can be envisioned not merely as eco-efficient spaces, but as socially just, culturally meaningful, and democratically governed institutions.

Conclusions

This study underscore that the early-stage implementation of the Green Hospital concept remains limited to physical infrastructure and technical compliance, such as energy-efficient lighting and waste segregation, while largely overlooking the deeper social, cultural, and participatory dimensions that are essential for meaningful and sustainable transformation. This partial implementation suggests a technocratic approach to sustainability that fails to engage with the human and contextual realities of hospital operations, including how staff, patients, and communities perceive and experience the green agenda. The implications are significant: sustainability in healthcare must be understood not merely as an environmental or engineering problem but as a socio-technical and ethical undertaking that requires the integration of cultural values, stakeholder empowerment, and inclusive governance. Hospitals must therefore be repositioned as not only sites of care and treatment but also as spaces for environmental responsibility, cultural sensitivity, and democratic participation. Based on these findings, several key recommendations emerge: (1) hospitals should institutionalize environmentally sustainable behaviors in daily routines across clinical, administrative, and managerial levels; (2) structured mechanisms for stakeholder participation must be developed to ensure that staff, patients, and community members have a voice in planning and evaluating sustainability initiatives; (3) sustainability programs should be adapted to reflect local socio-cultural norms and practices to increase relevance and acceptance; (4) environmental and socio-cultural awareness must be integrated into training programs for all healthcare personnel to foster a shared sense of responsibility; (5) policies and evaluation frameworks must incorporate flexible, context-sensitive approaches that combine quantitative metrics with qualitative indicators such as patient dignity, communication quality, and community trust. Overall, a successful Green Hospital transition requires a paradigm shift from compliance-oriented implementation to participatory, culturally grounded, and ethically motivated transformation—one that aligns environmental goals with the lived experiences and values of the people it intends to serve.

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