

A Design Thinking Approach to Healing-Oriented Interior Redesign at Cendana Pavilion, Dr. Moewardi Hospital

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Received 25 February 2026; accepted 8 May 2026; published 13 June 2026

ABSTRACT

Visitor numbers at Dr. Moewardi Regional Hospital in Surakarta rose in 2023, yet Cendana, its executive pavilion and outpatient facility, does not fully support patient recovery or the activities of its users. This study applies the design thinking framework of Ashour (2022) to the interior redesign of Cendana, moving through five phases: formulating, reflecting, representing, evaluating, and output. Data came from field observation, a document review, a user survey, and interviews with patients, companions, and medical staff. Users reported long waiting times, circulation that conflicted with growing visitor numbers, inadequate lighting, and a high-contrast color scheme that caused visual discomfort. The redesign responded through spatial layout, theme, circulation, and wayfinding, organized around four patient-centered aspects: control, comfort, connect, and access. Users responded positively to the proposed design in qualitative feedback. The study shows how a phased design thinking process can carry user findings into interior decisions in a hospital setting. The findings are limited to Cendana and do not measure clinical outcomes.

KEYWORDS

Design thinking;
Hospital interior
design;
Healing environment;
Patient-centered
design;
Psychological well-
being.

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1. Introduction

The physical setting of a hospital is part of the care it delivers. A review of the research literature on evidence-based healthcare design links features such as lighting, daylight, acoustic quality, and floor layout to patient safety, staff well-being, and rates of hospital-acquired infection (Ulrich et al., 2008). Users' own accounts point the same way. In a study that used the ASPECT toolkit, patients and staff connected lighting design to the quality of nursing care and wall color to stress reduction, and they asked for wards that varied in color, composition, and material (Soh et al., 2015). An interior can meet its clinical brief and still work against the people who use it.

Dr. Moewardi Regional Hospital in Surakarta is a Class A hospital owned by the Central Java Provincial Government (RSUD Dr. Moewardi, 2025), shown in Figure 1. Its Cendana building houses inpatient and outpatient services across three floors (RSUD Dr. Moewardi, 2025). The hospital's 2023 annual report records a rise in outpatient and inpatient visitors. Figure 2 shows the outpatient registration area of Cendana: four service counters finished in lime green and wood-patterned panels, a row of green chairs, and a glossy white floor. The authors' preliminary observations and interviews found that the interior does not yet support patient recovery or the activities of its users, and Results reports what users said.



Fig. 1. Aerial view of Dr. Moewardi Regional Hospital. Source: rsmoewardi.com



Fig. 2. Outpatient registration area, Cendana Pavilion. Source: author's documentation.

Design thinking offers a way to work on this problem, because it begins with users' experience and moves through repeated cycles of framing, ideation, and testing. In healthcare, a systematic review of 24 studies found that design thinking interventions often succeeded and, when compared directly with conventionally developed ones, produced greater satisfaction, usability, and effectiveness. Most of those studies, however, were small, used weak designs, and only two were rated as good quality (Altman et al., 2018). A scoping review of 67 studies on patient experience made a related point from the other side: current research lacks the iterative cycle of divergent and convergent thinking at the center of design thinking (Kim et al., 2022). The evidence supports using the approach, but it does not show that the approach has been proven.

For interior design, Ashour (2022) proposes a design thinking framework, developed through a literature review, for shaping new interior design concepts. A framework built from literature leaves open how its phases perform on a real project. This study applies it to the interior redesign of Cendana in five phases: formulating, reflecting, representing, evaluating, and output. The redesign is organized around four patient-centered aspects: control, comfort, connect, and access.

The study documents how observations, surveys, and interviews with patients, companions, and medical staff were carried through each phase into interior decisions, and it reports users' responses to the proposed design. It does not measure clinical outcomes. Because the evaluation rests on user feedback, the findings show acceptance within one facility, not an effect on recovery.

2. Method

This study is a qualitative design project that uses a design thinking framework as its research procedure. In healthcare research, design thinking centers on understanding users, working collaboratively, and building prototypes quickly (Altman et al., 2018). The framework adopted here follows Ashour (2022) and has five phases: formulating, reflecting, representing, evaluating, and output (Figure 3). Representing and evaluating form a cycle that repeats until the design is settled, and the other phases run once, in sequence.

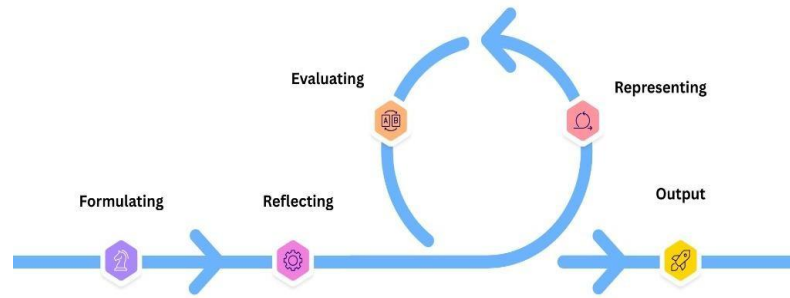


Fig. 3. Design thinking framework phases applied to the Cendana redesign. Source: redrawn from Ashour (2022)

The site is Cendana, the inpatient and outpatient building of Dr. Moewardi Regional Hospital in Surakarta (Figure 2). The redesign covered the waiting room, the medical ward, the outpatient department, the nurse station, and the inpatient department. Participants were patients, patient companions, and medical staff who use Cendana. Administrative and medical staff were also interviewed in the first phase. The redesign was organized around four patient-centered aspects: control, comfort, connect, and access. Table 1 sets out what was done in each phase and what data it produced.

Table 1. Table 1. Phases of the redesign and their data

Phase	Activity	Data
Formulating	Define the problem and a preliminary healing-environment concept	Field observation of spatial conditions, circulation, and atmosphere; preparatory interviews with administrative and medical staff; review of the hospital's history and institutional vision
Reflecting	Check physical-environment conditions with users	Survey of patients, companions, and medical staff
Representing	Develop design alternatives: spatial layout, theme and style, circulation	Synthesis of earlier data through the four patient-centered aspects; sketching and brainstorming
Evaluating	Test the alternatives with users	Interviews with patients, companions, and medical staff about the proposed design
Output	Finalize the design	Revisions made after user feedback

Notes and photographs were taken before the first meeting with users. Interviews were recorded and transcribed into notes. Each interview opened with the same question, "Could you tell me about your impressions or experience of this environment?", and participants then described how they felt while receiving care. Observation notes, interview notes, and survey responses were read for recurring issues, such as waiting time, circulation, lighting, and color. These issues set the design objectives in the representing phase, and user feedback in the evaluating phase decided which revisions were made. User responses are reported as stated, and the study does not measure clinical outcomes.

3. Result and Discussion

3.1 Problems reported by users

Field observation and the preparatory interviews showed that the interior of Cendana does not yet support recovery or the activities of its users. The survey and interviews then asked patients, companions, and medical staff about the physical environment. The overall report showed that users did not have a good experience in the outpatient and inpatient departments, and it named four recurring problems. Patients and families were dissatisfied with long waiting times. Activity flows conflicted with the steady rise in visitor numbers. Indoor lighting was inadequate. And a highly contrasting color scheme caused visual discomfort.

3.2 From findings to design

In the representing phase, these findings were turned into design alternatives for the waiting room, the medical ward, the outpatient department, the nurse station, and the inpatient department.

The alternatives dealt with spatial layout, theme and style, and a circulation system intended to support user flow. The concept also aimed to improve the process flow between patients, families, and hospital staff, and the communication between families and staff. The four patient-centered aspects of control, comfort, connect, and access framed these decisions, and wayfinding support elements emerged among the design features. Sketching and a brainstorming session helped the designer decide what information to convey and how.

3.3 User evaluation

The proposed design was then taken back to patients, companions, and medical staff in interviews. Users of Cendana responded positively. They said the design addressed their needs and concerns about the hospital environment and expressed appreciation for the improvements. This feedback became the basis for the final design. The designer reported that it clarified how to bring healthcare providers, the facility, and users' well-being together. The author also notes that presenting the final interviews to hospital staff in a format familiar to them may encourage clinicians to take part in the design process.

3.4 Discussion

The results show how a phased process can link what users say to what a designer decides. The problems users raised are not peripheral. Lighting, daylight, and floor layout appear among the environmental factors that the healthcare design literature connects to patient and staff outcomes (Ulrich et al., 2008). In another study, patients and staff linked lighting design to the quality of nursing care and wall color to stress reduction (Soh et al., 2015). Complaints about light and color at Cendana therefore belong to a recognized set of concerns. Waiting time and crowded flows are different. They depend partly on how services are organized, so an interior redesign can ease their effects without removing their cause.

The positive response should be read as acceptance, not as proof that design thinking improved the project. The study has no baseline and no comparison, and it does not report how many participants took part or how many times the representing–evaluating cycle was repeated. Users also evaluated the design in interviews with the person who produced it, which can favor positive answers. The wider evidence for design thinking in healthcare is promising but rests on small studies with weak designs (Altman et al., 2018). The cycle of proposing a design and testing it with users does answer, in procedure, a gap that Kim et al. (2022) describe in patient experience research: the lack of iterative divergent and convergent thinking. Whether that cycle produced a better interior than another process would have, this study cannot say.

Further work should measure outcomes before and after implementation, such as patients' perceived waiting time, stress, and satisfaction, and should include staff as well as patients, because the effect of design on staff performance is still thinly documented.

4. Conclusion

This study applied Ashour's (2022) design thinking framework to the interior redesign of Cendana at Dr. Moewardi Regional Hospital. Observation, a user survey, and interviews showed four recurring problems: long waiting times, activity flows that conflicted with rising visitor numbers, inadequate lighting, and a high-contrast color scheme that caused visual discomfort.

The redesign answered these through spatial layout, theme, circulation, and wayfinding elements, organized by the aspects of control, comfort, connect, and access. When the proposal was returned to users for evaluation, they responded positively. This shows acceptance within one facility. It does not show that recovery improved, or that design thinking performs better than other design procedures.

The findings are exploratory because they rest on interview feedback from users of a single building. Further work should test redesigned interiors against measured outcomes, include staff as well as patients, and compare design thinking with other design procedures.

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