Journal of Psychology and Neuroscience

Patient Autonomy and Co-Creation: Evidence-Based Approaches to Designing Healing Environments
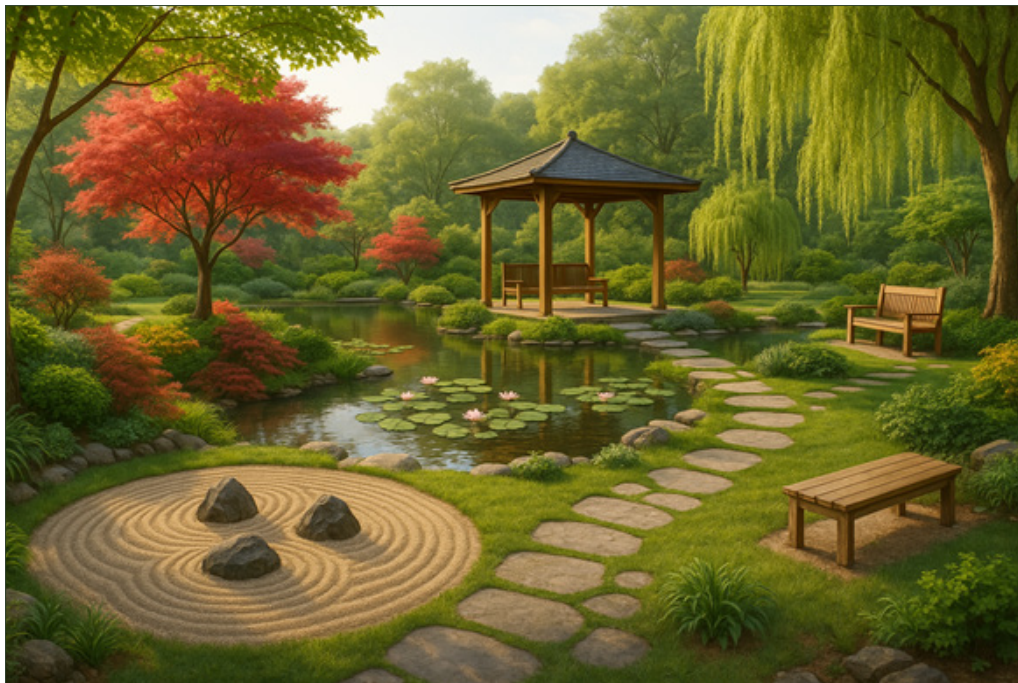
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Abstract

This article explores the integration of evidence-based design principles with Christopher Alexander's pattern language and patient-centered philosophies to create healthcare environments that enhance healing through patient autonomy. Drawing on contemporary research, the paper establishes that physical spaces supporting patient agency can significantly improve health outcomes, satisfaction, and wellbeing. The study introduces a framework organized around three interconnected realms—Contemplative, Interpersonal, and Communal—each designed to support different dimensions of patient autonomy. Key design elements include environmental control systems, meaningful connections to nature, and spatial organizations that facilitate choice and movement. Case studies of Maggie's Centres and Dell Children's Medical Center demonstrate successful implementations of these principles. The paper also addresses implementation challenges related to regulatory constraints, professional culture, and financial considerations. By empowering patients within thoughtfully designed spaces that honor the unity of body, mind, and spirit, healthcare environments can become active participants in the healing process rather than passive backdrops to medical interventions.

Keywords: Healing spaces, patient autonomy, evidence-based design, co-design, pattern language, holistic healthcare, therapeutic environments, environmental control, biophilic design, healing gardens.

Introduction

The design of healthcare environments has evolved significantly beyond merely addressing functional and technical requirements. Contemporary approaches recognize the profound impact physical spaces can have on healing processes, psychological wellbeing, and patient autonomy. This article explores how evidence-based design principles can be integrated with concepts like Christopher Alexander's pattern language and patient-centered philosophies to create environments that actively support healing through enhanced patient autonomy and participation.

As I have noted (2025), "The persistent influence of Cartesian dualism in modern healthcare continues to be identified as a fundamental barrier to holistic patient care" (Ungar-Sargon, 2025). This observation highlights the need to move beyond environments that treat patients as passive recipients of care toward spaces that recognize and support their agency in the healing process. Emerging research demonstrates that physical environments designed with patient autonomy in mind can significantly improve health outcomes, patient satisfaction, and overall wellbeing (Ungar-Sargon, 2024; The Center for Health Design [CHD], 2018; Huisman et al., 2012).

Patient-Centered Healing Environments

Evidence-based design (EBD) has become the theoretical concept for what are called healing environments (Huisman et al., 2012). This approach requires that design decisions be based on credible research to achieve the best possible health outcomes. According to The Center for Health Design, a "homelike, de-institutionalized environment supportive of patient autonomy and control over a personal environment" is a critical component of healing spaces (The Center for Health Design [CHD], 2018). This perspective marks a significant shift from institutional healthcare design toward environments that support patient agency and choice.

Research from Huisman et al. (2012) consistently shows that environments supporting patient autonomy can reduce patients' perception of pain and use of pain medications, lower stress and anxiety levels, improve sleep quality and patterns, enhance overall patient satisfaction, and support faster recovery and shorter hospital stays (Huisman et al., 2012). These findings have been further substantiated by studies from the VA Whole Health Library (2023), which emphasize that "design isn't just an aesthetic luxury in health care; it's a core, health-related area" (VA Whole Health Library, 2023).

As Ulrich et al. (2008) demonstrated in their comprehensive review of evidence-based healthcare design, "When you use scientific evidence to drive the design of health care environments and processes, you impact a wide variety of factors, from medical errors and nosocomial infections to stress and staff turnover" (VA Whole Health Library, 2023). These findings align with Alexander's pattern language approach, which emphasizes creating spaces that respond to fundamental human needs and behaviors rather than imposing abstract conceptual schemes (Alexander et al., 1977).

Patients as Design Partners

A foundational principle in creating environments that support patient autonomy is involving patients in the design process itself. This "co-design" approach recognizes that patients possess valuable expertise about their own experiences and needs. The American College of Healthcare Executives (2022) recommends: "Whether you are planning a new facility or renovating the current one, a good place to start is with the concept of codesign: inviting patients, families and staff to participate in designing or renovating the clinical space" (American College of Healthcare Executives [ACHE], 2022).

Sanders and Stappers (2008) further developed this concept, noting that in co-creation, "the roles of designer and user blur and the realm of creativity extends to anyone involved in the design development process" (Cowman, 2019). This participatory approach can take several forms: including patient representatives on design teams from project inception, conducting focus groups to gather input from diverse patient populations, creating prototypes and mock-ups for patients to experience and evaluate, and using iterative design processes that incorporate ongoing patient feedback.

This approach reflects Alexander's emphasis on design processes that involve future users and unfold through small, iterative adaptations rather than comprehensive master plans imposed from above (Alexander et al., 1977). In "The Oregon Experiment" (1975), Alexander demonstrated how communities could participate in shaping their own environments through a process he called "diagnosing" spatial problems and developing appropriate patterns (Rafeeq & Mustafa, 2021). When applied to healthcare settings, this process creates environments that genuinely respond to patient needs rather than merely accommodating clinical functions.

Key Design Elements
Environmental Control

A critical aspect of patient autonomy in healthcare environments is providing meaningful control over the immediate surroundings. Research by MacAllister et al. (2016) indicates that patients identify healing spaces by "the feelings the space evoked; specifically, a sense of being cared for, a sense of home, and feelings of comfort and calm" (MacAllister et al., 2016).

Effective design elements that support environmental control include adjustable lighting systems allowing patients to modify light intensity and color temperature to support circadian rhythms and personal preferences (VA Whole Health Library, 2023). The VA Whole Health Library (2023) notes that "people in hospitals and nursing homes have better sleep at night with better daytime light exposure," and a 2005 study found that "post-operative spinal surgery patients housed on the bright (more sunlight) versus dim side of the hospital had less pain medication needs and costs as well as lower overall levels of stress" (VA Whole Health Library, 2023).

Sound management is equally important, providing options for music, nature sounds, or silence, along with effective acoustic treatments to minimize unwanted noise (VA Whole Health Library, 2023). As noted in the VA research, "When someone is startled by a noise, they may still show elevations in blood pressure and heart rate for hours thereafter. Noise can increase patients' perception of pain and the use of pain medications, may contribute to patient confusion, and certainly impairs sleep" (VA Whole Health Library, 2023).

Additional elements include temperature control with individual adjustment capabilities to support comfort and rest (Huisman et al., 2012), privacy options through curtains, screens, or architectural elements that allow patients to modulate their degree of privacy and social interaction (American College of Healthcare Executives [ACHE], 2022), and personalization opportunities that provide spaces for personal items, photographs, and customization that support a sense of identity and familiarity (MacAllister et al., 2016).

These elements align with Alexander's patterns such as "Light on Two Sides of Every Room" (Pattern 159) and "Alcoves" (Pattern 179), which create balanced illumination and sheltered spaces within larger environments (Alexander et al., 1977). Alexander observed that rooms with light from only one side create uncomfortable glare and sharp shadows, while light from multiple directions creates balanced illumination and a sense of spaciousness (Alexander et al., 1977). Similarly, his "Alcoves" pattern recognizes the human need for sheltered spaces within larger social environments, creating small, partially enclosed spaces within larger rooms where individuals or small groups can retreat while remaining connected to the larger environment (Alexander et al., 1977).

Connection to Nature

Research repeatedly confirms the healing benefits of connection to nature in healthcare settings. The Environment-Occupant-Health (EOH) framework developed by Zhang (2018) identifies this as an essential component of healing environments (Yan et al., 2024). This framework "provides an integrated perspective on how the essential features of hospital buildings impact the health and healing outcomes of residents" (Yan et al., 2024).
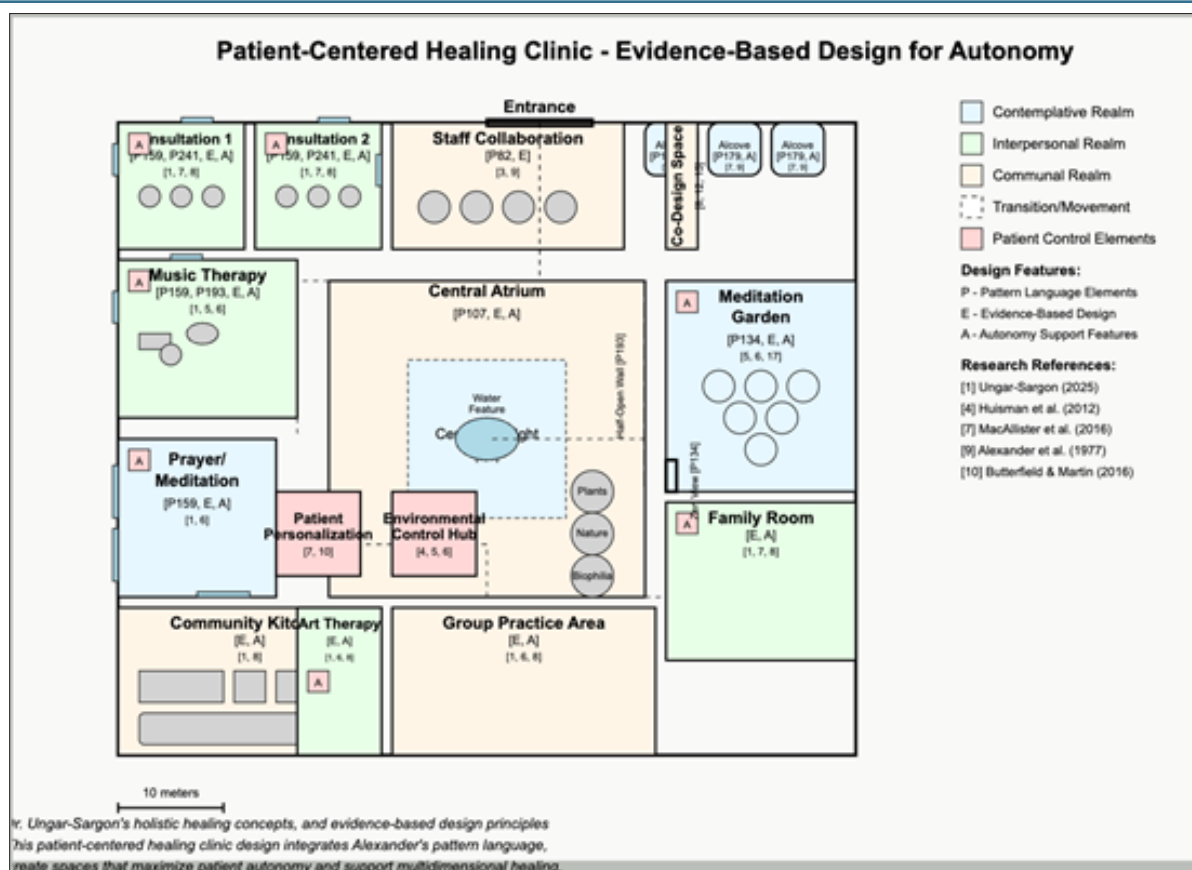
Berman et al. (2012) demonstrated that "interacting with nature improves cognition and affect for individuals with depression" (Ungar-Sargon, 2025). This finding has significant implications for healthcare design, suggesting that natural elements can support mental health alongside physical recovery.

Design strategies to incorporate nature include views of nature through windows and skylights positioned to provide natural vistas from patient beds and seating areas (VA Whole Health Library, 2023). Kaplan and Kaplan's (1989) research on "attention restoration" shows how natural views allow depleted cognitive resources to recover through engagement with restorative natural environments (Alexander et al., 1977).

Indoor plantings strategically placed throughout healthcare environments bring natural elements into interior spaces (American College of Healthcare Executives [ACHE], 2022). The American College of Healthcare Executives (ACHE, 2022) notes that "plants and water features all make for a more welcoming space" (American College of Healthcare Executives [ACHE], 2022). Natural materials such as wood, stone, and other natural elements provide tactile connections to the natural world (Butterfield & Martin, 2016), while water features engage multiple senses and create calming effects (Yan et al., 2024).

Gardens and outdoor spaces designed for contemplation and restoration are particularly valuable (American College of Healthcare Executives [ACHE], 2022). Maggie's Centres throughout the United Kingdom exemplify this approach, with each center featuring "connection to gardens, graduated transitions between public and private spaces, and areas for both social interaction and quiet reflection" (Butterfield & Martin, 2016).

These approaches connect with Alexander's pattern of "Wings of Light" (Pattern 107), which emphasizes human need for natural light, and his concept of "Zen View" (Pattern 134), which creates moments of connection with beautiful natural elements (Alexander et al., 1977). Alexander observed that constant exposure diminishes our appreciation of beautiful views, suggesting that spaces should be designed to reveal beautiful vistas at special moments rather than constantly exposing them (Alexander et al., 1977).

Patient-Centered Healing Clinic - Evidence-Based Design for Autonomy

Dr. Ungar-Sargon's holistic healing concepts, and evidence-based design principles
This patient-centered healing clinic design integrates Alexander's pattern language,
create spaces that maximize patient autonomy and support multidimensional healing.

Spatial Organization

The arrangement of spaces can significantly impact patients' sense of autonomy by either restricting or enabling movement and choice. Evidence-based approaches recommend clear wayfinding through intuitive spatial organization and effective signage that allows independent navigation without confusion or disorientation (American College of Healthcare Executives [ACHE], 2022). The American College of Healthcare Executives (ACHE, 2022) emphasizes that "designs that achieve these objectives promote efficiency, thus saving time for staff and patients" (American College of Healthcare Executives [ACHE], 2022).

Graduated privacy through a spectrum of spaces ranging from public to private allows patients to choose their level of social engagement (MacAllister et al., 2016). MacAllister et al. (2016) found that patients valued environments that offered different degrees of privacy and social connection, allowing them to modulate their experiences according to changing needs (MacAllister et al., 2016).

Accessibility through universal design principles accommodates diverse abilities and removes barriers to independent movement (The Center for Health Design [CHD], 2018). The Center for Health Design emphasizes that healing environments must be accessible to people with varying abilities, applying universal design principles throughout to create an environment that welcomes all bodies and abilities (The Center for Health Design [CHD], 2018).

Activity support through spaces designed for various activities from quiet contemplation to social interaction, creative expression, and physical movement (Yan et al., 2024) allows patients to engage in meaningful activities that support their healing process. The EOH framework includes "flexibility" as one of its 10 parameters affecting health outcomes, emphasizing the importance of adaptable spaces that can accommodate diverse needs and activities (Yan et al., 2024).

Transitional spaces with thoughtfully designed thresholds between different functional areas support psychological transitions and choices (Butterfield & Martin, 2016). Butterfield and Martin's (2016) research on Maggie's Centres found that "graduated transitions between public and private spaces" contributed significantly to patients' sense of wellbeing and autonomy (Butterfield & Martin, 2016).

These considerations align with several of Alexander's patterns, including "Sequence of Sitting Spaces" (Pattern 142) and "Staircase as Stage" (Pattern 133), which acknowledge the importance of graduated transitions between different types of spaces (Alexander et al., 1977).

The Three Realms Approach

Spaces devoted to personal reflection, meditation, and spiritual connection should offer individual control over sensory inputs (light, sound, temperature), privacy options that can be adjusted according to preference, personal items and customization opportunities, connection to nature through views, materials, or plantings, and support for various cultural and spiritual practices.

Ungar-Sargon (2025) describes this realm as addressing "the need for introspection and spiritual connection in the healing process" (Ungar-Sargon, 2025). The contemplative realm includes meditation gardens with "natural elements such as flowing water, mindfully selected plants, and seating arrangements that support contemplative practices," prayer/meditation rooms designed to support various spiritual practices, and individual reflection niches where "individuals can find moments of quiet contemplation amid the activities of daily care" (Ungar-Sargon, 2025).

Spaces supporting therapeutic relationships and family connections should provide non-hierarchical seating arrangements that equalize power dynamics, adequate space for family participation in care discussions, acoustic and visual privacy for sensitive conversations, options for closing or opening spaces to desired degrees of connection, and digital connectivity tools that extend relational networks beyond physical space.

As I have previously noted (2025), the interpersonal realm "facilitates the therapeutic relationships that are central to the healing process" (Ungar-Sargon, 2025). This includes consultation spaces "designed for deep listening and presence, with careful attention to seating arrangements, acoustics, and lighting that support genuine connection," family rooms that "accommodate and honor the role of family and community in healing," and creative arts studios for "music therapy, art therapy, and other creative modalities that foster expression and connection" (Ungar-Sargon, 2025).

The Communal Realm
Spaces facilitating community connection and shared activities should offer flexible arrangements that accommodate varying group sizes and activities, accessible design that welcomes diverse abilities and preferences, supportive technologies for various forms of communication and expression, cultural inclusivity through adjustable elements and multipurpose spaces, and balance between stimulation and calm to accommodate different sensory needs.

I also noted the communal realm as acknowledging "the social dimensions of healing and the importance of community in supporting recovery" (Ungar-Sargon, 2025). This includes a central gathering space that serves as "the heart for the community with flexible seating arrangements and excellent acoustics for both conversation and musical performances," a community kitchen that "recognizes the spiritual dimensions of sharing food and breaking bread together," and group practice areas that can be "reconfigured to accommodate various group sizes and activities" (Ungar-Sargon, 2025).

This framework recognizes that autonomy exists not only at the individual level but also in relational and social dimensions that support a person's full identity and agency in the healing process.

Evidence-Based Evaluation
The creation of environments supporting patient autonomy requires ongoing evaluation to assess effectiveness and inform improvements. Multiple assessment tools have been developed, including ASPECT (A Staff and Patient Environment Calibration Tool), which evaluates user perceptions of healthcare environments across multiple dimensions (Rafeeq & Mustafa, 2021). Rafeeq and Mustafa (2021) employed this tool in their research on hospital environments in Erbil city, noting that "an EBD questionnaire-ASPECT was distributed to the users to assess the healing environment within specific cases" (Rafeeq & Mustafa, 2021).

AEDET (Achieving Excellence Design Evaluation Toolkit) assesses the quality of design in healthcare buildings (Rafeeq & Mustafa, 2021). Rafeeq and Mustafa (2021) used "a modified EBD-AEDET tool as a checklist evaluation" in their research, demonstrating its value in assessing how well healthcare environments support healing (Rafeeq & Mustafa, 2021).

The Environment-Occupant-Health (EOH) framework developed by Zhang (2018) provides an integrated perspective on how essential features of healthcare buildings impact health outcomes (Yan et al., 2024). This framework "includes three design principles, namely a comfortable environment, well-functioning and healing spaces, and a relaxing atmosphere" along with "10 parameters (ventilation, air quality, noise, temperature, light, polyphony, natural sound, odor, safety, and flexibility) that have different effects on health outcomes" (Yan et al., 2024).

Design Strategies for Healing Internal Environments (DSHIE) focuses specifically on interior elements that facilitate patient healing (Yan et al., 2024). This framework, developed by Younis (2021), "incorporates three key design strategies: a support strategy, which utilizes specific elements to enhance physical and mental health; a balanced strategy, which aims to harmonize these elements; and a nourishment strategy, which addresses emotional, spiritual, and soul aspects" (Yan et al., 2024).

These evidence-based methods allow for systematic evaluation of how well environments support patient autonomy and other dimensions of healing.

Maggie's Centres
The Maggie's Centres for cancer support throughout the United Kingdom exemplify environments designed to maximize patient autonomy. These facilities reject institutional healthcare aesthetics in favor of domestic-scale environments that feel more like homes than hospitals. Butterfield and Martin (2016) describe these centers as "affective sanctuaries" that create therapeutic landscapes for patients navigating cancer treatment (Butterfield & Martin, 2016).

Each center features kitchen tables as central gathering points, allowing patients to choose when and how to engage with others, multiple types of spaces supporting different activities

and social configurations, abundant natural light and garden connections, absence of clinical signage or institutional aesthetics, and freedom of movement without prescribed pathways (Butterfield & Martin, 2016).

Architectural critic Charles Jencks, who co-founded the centers, explicitly referenced Alexander's work in developing the architectural brief (Butterfield & Martin, 2016). Research demonstrates that these environments significantly reduce anxiety and increase emotional wellbeing among patients by supporting their sense of control and normalcy during treatment (Butterfield & Martin, 2016).

Dell Children's Medical Center

This LEED Platinum-certified hospital in Austin, Texas, incorporated patient autonomy principles throughout its design process and physical environment. Guenther and Vittori (2013) documented how the facility was "designed using a participatory process involving patients, families, and staff" (Butterfield & Martin, 2016).

Key features include age-appropriate control mechanisms allowing children to adjust lighting, entertainment, and room temperature, outdoor healing gardens designed with input from child patients, family zones in patient rooms supporting parental participation in care, art selection involving patient input and local children's artwork, and distinct age-appropriate spaces for different developmental stages (Butterfield & Martin, 2016).

The facility incorporates numerous Alexandrian patterns including "courtyards which live," "light on two sides of every room," and "zen view" (Butterfield & Martin, 2016). Post-occupancy evaluation has demonstrated improvements in patient outcomes, reduced medication errors, and increased staff satisfaction compared to the hospital's previous facility (Butterfield & Martin, 2016).

Challenges

Creating environments that genuinely support patient autonomy presents several challenges:
Healthcare environments are heavily regulated, with numerous codes governing aspects from infection control to fire safety. These regulations may sometimes conflict with patterns that support psychological wellbeing and autonomy.

Cowman (2019) suggests developing what she calls "creative compliance" - finding ways to satisfy regulatory requirements while maintaining the essential qualities of healing environments (Cowman, 2019). This might involve innovative material selections, careful zoning of spaces, or alternative approaches to achieving safety goals. As Cowman notes, successful implementation requires balancing regulatory requirements with the essential qualities of healing environments (Cowman, 2019).

Professional Culture

Many healthcare professionals are trained in environments that prioritize efficiency and standardization over patient autonomy and preference. Shepley et al. (2016) recommend implementing what they call "environmental literacy training" that helps clinicians recognize and leverage environmental features in their interactions with patients (Shepley et al., 2016). This training helps staff understand how to support patient choices within the designed environment rather than defaulting to standardized protocols.

As Shepley's research demonstrates, this training might include understanding how to use varied spaces for different types of clinical encounters, how to incorporate nature into therapeutic interactions, and how to guide patients in utilizing contemplative spaces (Shepley et al., 2016).

Financial Considerations

Creating environments that support patient autonomy may require initial investments beyond conventional healthcare construction. Berry et al. (2004) document the return on investment through metrics such as reduced length of stay, decreased medication usage, improved patient satisfaction scores, and lower staff turnover rates (Butterfield & Martin, 2016).

As Berry's research demonstrates, "evidence-based design can yield substantial financial benefits while improving care quality" (Butterfield & Martin, 2016). These findings highlight the importance of considering both initial costs and long-term benefits when evaluating investments in autonomy-supporting environments.

Conclusion

The integration of Christopher Alexander's pattern language, evidence-based design principles, with my holistic healing philosophy offers a robust framework for creating environments that actively support patient autonomy as a central aspect of healing.

These approaches converge around several key principles: recognize patients as active participants rather than passive recipients in their healing journey; create environments that support choice, control, and personalization at multiple scales; engage patients as co-designers in the creation and evolution of healing spaces; connect human experience with the built environment through evidence-based patterns; and balance individual autonomy with opportunities for meaningful connection and community.

As I wrote: "We must move beyond 'reducing the diagnosis to what can be observed and measured' to create healing environments that honor the full dimensions of human experience—body, mind, and spirit in their essential unity rather than artificial separation" (Ungar-Sargon, 2025). By empowering patients within thoughtfully designed spaces, we create conditions for more effective, humane, and sustainable healing.

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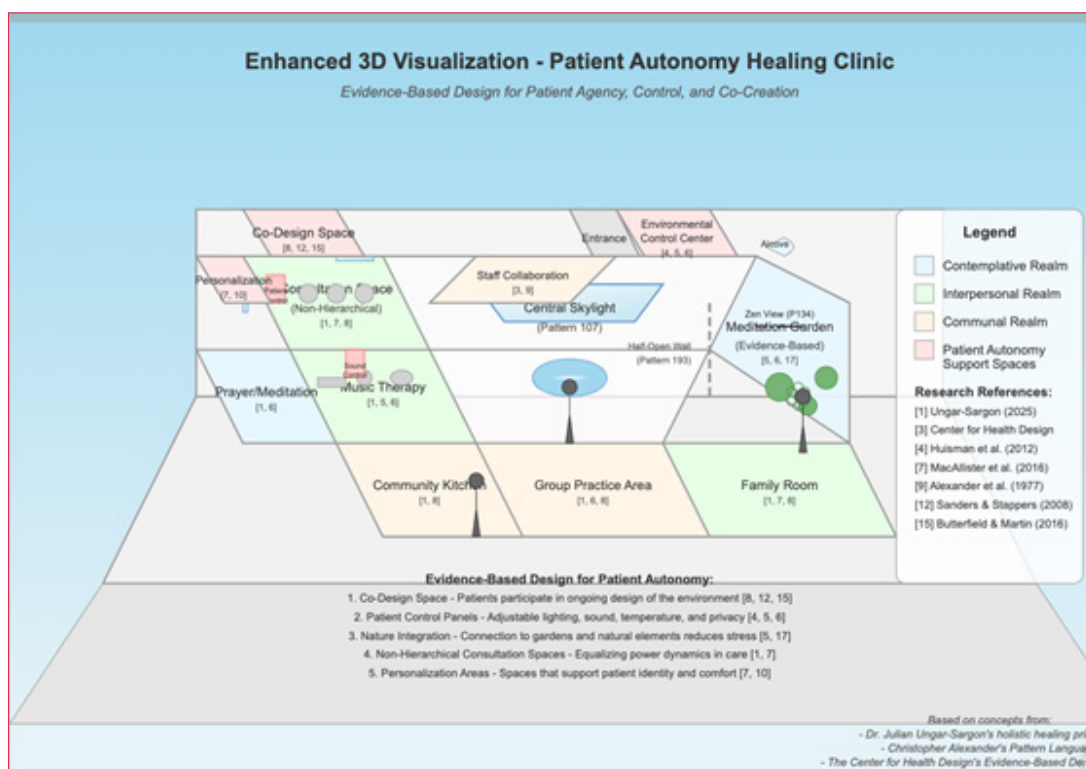
Updated Floor Plan - Patient Autonomy Healing Clinic
The floor plan includes

- Patient Control Elements (highlighted in light red) throughout the clinic, showing where patients have direct control over their environment
- Clear Reference Citations with numbered citations (Ungar-Sargon, 2025), (Huisman et al., 2012), etc. corresponding to the research references

New Spaces dedicated to patient autonomy:

- Co-Design Space where patients participate in ongoing design decisions (American College of Healthcare Executives [ACHE], 2022; Cowman, 2019; Sanders & Stappers, 2008).
- Patient Personalization Area for supporting identity and familiarity (MacAllister et al., 2016; Butterfield & Martin, 2016).
- Environmental Control Hub centralizing systems for patient comfort (Huisman et al., 2012; VA Whole Health Library, 2023; Asano et al., 2024).
- Integration of Three Healing Realms with color coding (Contemplative, Interpersonal, and Communal)
- Pattern Language Elements from Alexander's work, labeled with "P" followed by the pattern number
- Evidence-Based Design Features informed by research, labeled with "E"
- Autonomy Support Features specifically focused on patient choice and control, labeled with "A"
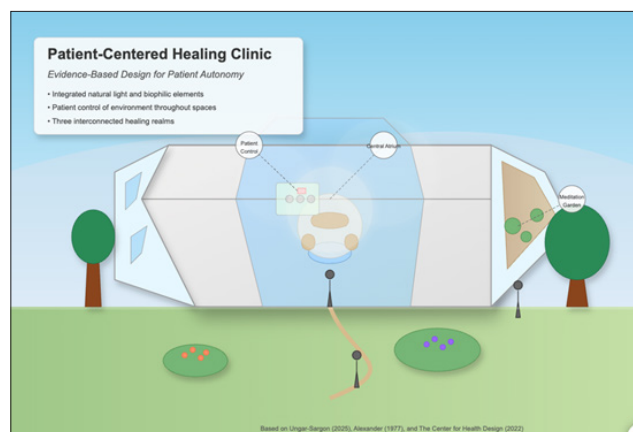
Architectural Example

AI created an architectural rendering of the patient-centered healing clinic that incorporates photorealistic elements that architects would typically use in client presentations. This rendering showcases the key features of our design concept while highlighting the evidence-based elements that support patient autonomy.

Key features of the architectural visualization include:

1. Integrated Natural Setting: The building is shown nestled in a natural landscape with therapeutic gardens and accessible green spaces, reflecting research on the healing benefits of nature.
2. Central Light-Filled Atrium: A glass-enclosed central space that draws natural light deep into the building, implementing Alexander's "Wings of Light" pattern (P107) and evidence-based principles about daylight's healing properties.

3. Meditation Garden Wing: A dedicated wing with an integrated garden space that implements the "Zen View" concept (P134) and provides access to nature for contemplation and reflection.
4. Patient Control Elements: Highlighted in the design are the patient control panels (shown in salmon color) that allow for personalized adjustment of lighting, temperature, and privacy levels.
5. Non-Hierarchical Spaces: The consultation areas are designed with circular seating arrangements that eliminate power dynamics between providers and patients.
6. Three Interconnected Realms: The visualization shows how the contemplative, interpersonal, and communal spaces flow together while maintaining their distinct therapeutic qualities.

The rendering includes human figures for scale and to demonstrate how people might interact with different areas of the clinic. Callout bubbles highlight key features of the design, and the title block provides context about the project's evidence-based approach.

This type of visualization would typically be used in early design presentations to convey the overall concept, feeling, and key features of the proposed healing environment before detailed technical drawings are developed.

Landscaping

AI created a landscape image that showcases the healing clinic's outdoor environment. This visualization includes the key therapeutic landscape elements discussed in our article about patient-centered healing spaces.

The image features:
1. Meditation Garden - A dedicated outdoor space with a wooden pavilion where patients can practice mindfulness and contemplation. This implements Alexander's "Zen View" pattern and evidence-based research showing the therapeutic benefits of dedicated contemplative spaces.
2. Therapeutic Pond - A central water feature with lotus flowers and lily pads that provides both visual interest and the calming effects of water. Research has demonstrated that water features can reduce stress and create a sense of tranquility.
3. Diverse Vegetation - Various trees including a Japanese maple and weeping willow, which create diverse textures, colors, and experiences in the landscape. The planting design follows evidence-based biophilic principles.
4. Stone Pathways - Carefully designed paths that connect different areas of the garden, allowing for both directed movement and contemplative walking experiences.
5. Zen Garden - An area with carefully placed rocks and gravel patterns that supports mindful focus and stress reduction.
6. Private Seating Areas - Multiple locations throughout the garden where patients can sit and enjoy different views and experiences, supporting the autonomy to choose their environment.

All these elements work together to create a healing environment that respects patient autonomy while providing evidence-based design features that support recovery and wellbeing. The landscape serves as an extension of the indoor healing spaces, allowing patients to benefit from connection with nature as part of their healing journey.