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Healing Architecture in Healthcare: A Scoping Review

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Abstract

Objectives: The purpose of this scoping review is to identify evidence on how characteristics of healing architecture in clinical contexts impact clinical practice and patient experiences. Based on these insights, we advance a more practice-based approach to the study of how healing architectures work. **Background:** The notion of “healing architecture” has recently emerged in discussions of the spatial organization of healthcare settings, particularly in the Nordic countries. This scoping review summarizes findings from seven articles which specifically describe how patients and staff experience characteristics of healing architecture. **Methods:** This scoping review was conducted using the framework developed by Arksey and O’Malley. We referred to the decision tool developed by Pollock et al. to confirm that this approach was the most appropriate evidence synthesis type to identify characteristics related to healing architecture and practice. To ensure the rigor of this review, we referred to the methodological guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analysis extension for Scoping Reviews. **Results:** There are two main findings of the review. First, there is no common or operative definition of healing architecture used in the selected articles. Secondly, there is limited knowledge of how healing architecture shapes clinical and patient outcomes. **Conclusions:** We conclude that further research is needed into how healing architectures make a difference in everyday clinical practices, both to better inform the development of evidence-based designs in the future and to further elaborate criteria to guide postoccupancy evaluations of purpose-built sites.

Keywords

healing architecture, healthcare, practice, design, scoping review

Introduction

There is now an extensive literature in health geography (Andrews, 2004; Cummins et al., 2007; Duff, 2011; Kearns & Moon, 2002), the sociology of health and illness (Ivanova et al., 2016; Martin et al., 2015; Nettleton et al., 2018), and architecture and design (Annemans et al., 2017; Stevens et al., 2019) exploring the mediating relations between the built environment and experiences of care and recovery in healthcare settings. Ulrich’s (1984, 2008, 2010)

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pioneering work on evidence-based-design has been a key reference guiding research on how healthcare facilities can be designed to promote well-being, in general, and the development of *healing architecture*, in particular. Since Ulrich's (1984) early work, multiple design factors have been linked to improved health outcomes (Connellan et al., 2013; Reavey et al., 2017) as well the development of therapeutic environments in hospital settings (Gesler et al., 2004), including single rooms, ambiance, sunlight, views to nature, wayfinding, and personal control over the immediate environment (Lawson, 2010; Ulrich et al., 2008). Although the contention that elements of the built environment can have a positive impact on treatment outcomes and patients' subjective well-being is well-established, the underlying dynamics of these relationships are far from settled (see Andrews & Duff, 2019; Bell et al., 2018; Cummins et al., 2007). Concerning healing architecture, which is an increasingly prominent feature of contemporary hospital design debates (Frandsen et al., 2009, 2012; Lawson, 2010; Nickl-Weller & Nickl, 2013; van den Berg & Wagenaar, 2006), these questions are even more acute insofar as the very idea of healing architecture proposes a causal link between the design of a site and the therapeutic experiences of hospitalized individuals.

The primary analytical focus of recent attempts to explain the therapeutic significance of healthcare settings has typically involved assessments of the impact of spatial design (DuBose et al., 2018) and select architectural properties on health outcomes, as a way of enhancing understanding of the lived experiences of people occupying individual sites where care is provided. As a result, a host of novel conceptualizations have emerged, including work on therapeutic landscapes (Gesler, 1992, 2005; Pinfold, 2000), enabling places (Duff, 2012), therapeutic assemblages (Foley, 2011), and, more recently, design for human flourishing (Stevens et al., 2019) and patient-centered care (Vaughan et al., 2018). In a recent review of the literature, DuBose and colleagues (2018) explore the concept of healing spaces, identifying four antecedent components (psychological, social, behavioral, and functional) to assess how

healthcare spaces can foster healing, offering a draft definition, where healing spaces evoke a sense of cohesion of the mind, body, and spirit. Consequently, less attention has been directed toward how such spaces shape and are shaped by the clinical practices taking place within them (for some exceptions, see Andrews & Shaw, 2008; Simonsen, 2020; Water et al., 2018). Healing architecture is significant in this regard in that it offers a crucial intervention in discussions of the relationship between architectural properties and health outcomes by explicitly seeking to elaborate direct causal relations between the design of the built environment and the experience of care in place. Focusing on clinical practice offers a means of analytically integrating concern for both the design of space and the dynamics of care. Understanding how patients and healthcare professionals engage with each other and their shared material circumstances will, we argue, afford important insights into how such circumstances may be accommodated in the ongoing design and development of healing architecture. The purpose of this scoping review, therefore, is to identify evidence on how characteristics of healing architecture in clinical contexts impact clinical practice and patient experiences. Based on these insights, we advance a more practice-based approach to the study of how healing architectures *work* by focusing on the situated and dynamic processes through which healing spaces emerge in, and as a function of, clinical practice.

Method

This scoping review was conducted using the framework developed by Arksey and O'Malley (2005), which has since been refined by others (Khalil et al., 2021; Levac et al., 2010; Peters et al., 2015). We referred to the decision tool developed by Pollock et al. (2021) to confirm that a scoping review design was the most appropriate evidence synthesis type, opposed to a systematic review, to scope a body of literature, identify characteristics, and concepts related to healing architecture and practice. To guide the rigor and quality of this review, we referred to the methodological guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analysis extension

for Scoping Reviews (PRISMA-ScR; Tricco et al., 2018; Online Appendix). A review protocol does not exist for this review.

The research question guiding this scoping review was the following: What is the current state of knowledge regarding how healing architecture impacts clinical practice and patient outcomes? The motivation for conducting this scoping review was based on the insight that much of the existing research on the impact and importance of the built environment for health outcomes focuses on either identifying principles to inform design improvements in healthcare settings or exploring patients' subjective experiences of purpose-built healthcare settings. A scoping review is an appropriate means of bringing these elements together to guide future research.

Identifying Relevant Studies and Study Selection

The second author developed the search strategy, inclusive of the key words in consultation with two information specialists using the following electronic databases: CINAHL, PsycInfo, PubMed, and Web of Science. The search strategy was based on a combination of the following terms: "healing architecture" OR "healing space*" OR "healing environment*" AND "practice". The database search identified 423 citations that were imported into reference software EndNote X9. Duplicates were identified and removed, resulting in 349 unique citations. The titles and abstracts were screened against inclusion and exclusion criteria. Without restrictions on date or country, articles had to meet the following inclusion criteria: (i) described healing architectural design in a clinical context, (ii) linked the design to patient and staff experience, (iii) described practice implications of the design, (iv) peer-reviewed or conference proceedings based on empirical data, and (v) published in English.

Articles that did not refer to healing architecture, patient care, or clinical implications were excluded. Articles that described healing environments, in general, healing environment practices (e.g., meditation or training) or medical procedures that refer to architecture (e.g., polymer architecture for healing wounds) were also excluded. As a

result of this appraisal process, 10 articles were identified. The first and second authors further assessed the titles and abstracts, which confirmed the selection of the 10 articles. The reference lists of the short-listed articles were checked for relevance through backward reference list checking. Further, the Google Scholar "cited by" function was used to forward check the selected relevant studies. Two additional studies were identified through the citation chaining process. Twelve articles were read in full. Five articles were excluded on the grounds that they did not meet the criteria above or focus on a physical healing environment. This resulted in seven articles being selected for this review. Figure 1 summarizes the search and article selection process. All authors confirmed this shortlist to ensure consistency with the research question.

Data Extraction and Analysis

The selected articles were charted in Excel with information on lead author, year, location, study aim, research design and methods, healthcare setting, architecture/design feature, and main findings.

A qualitative descriptive approach (Elliott & Timulak, 2005) was used to analyze the key characteristics of healing architecture in practice in relation to the research question. Although a formal thematic analysis was not conducted, as advised by Khalil et al. (2021), findings were extracted and grouped into common themes with the research question in mind. The presentation and categorization of the results were discussed between the authors.

Results

Characteristics of the Articles

This scoping review identified seven articles that provide evidence regarding how healing architecture shapes clinical practice and patient outcomes (Table 1). Four of these studies were published in the past two years. All but one of the articles were based on Scandinavian studies with the majority ($n = 5$) being from Denmark. Qualitative research methods, such as observation studies and

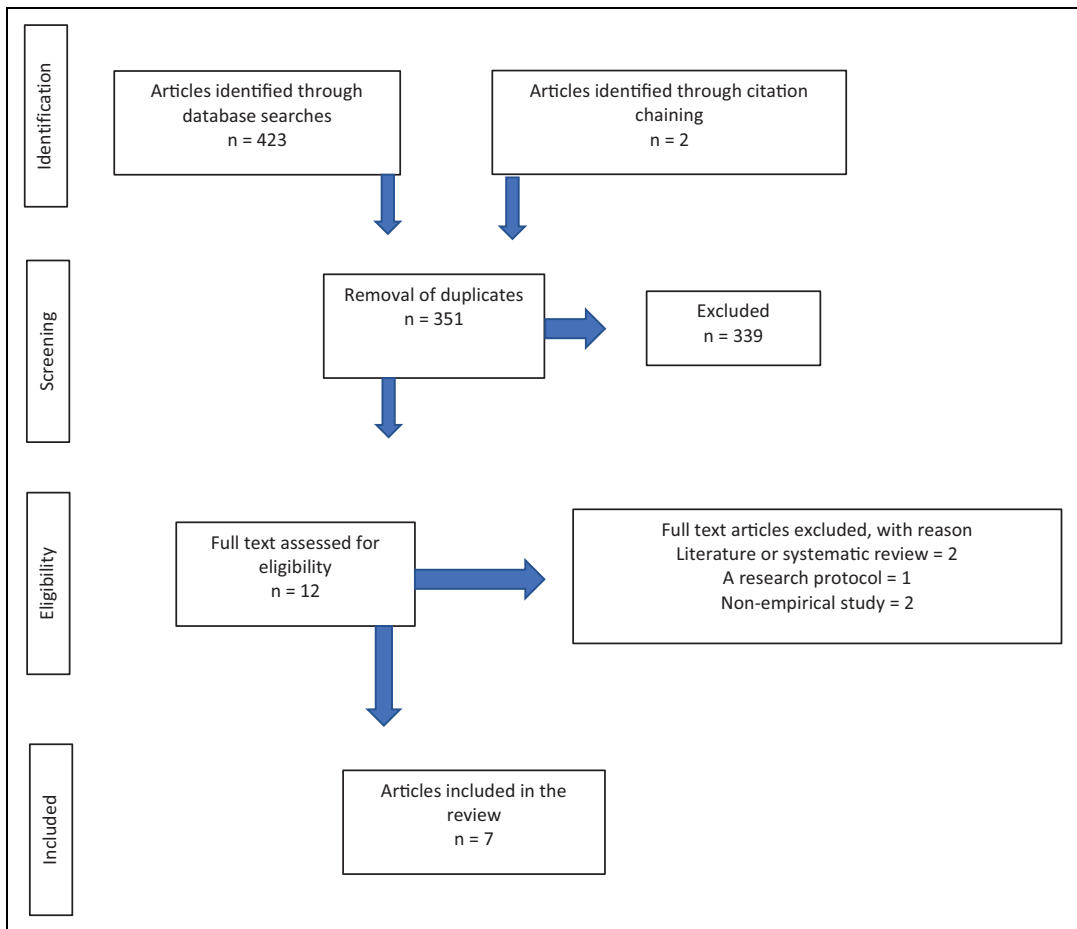


Figure 1. Preferred Reporting Items for Systematic Reviews and Meta-Analysis flow diagram of search and study selection. Source: Adapted from Moher et al. (2010).

semi-structured interviews, were most common. The clinical environments included in- and out-patient settings with a focus on general hospitals and more specialized care settings were also featured. Findings reflected the experiences and design preferences of patients, staff, and visitors. Four articles describe purpose-built healing architecture and three studies referred to the architect responsible for the design and some of the ideas that framed their design thinking. Two articles were from the same study.

Definitions and Concepts in the Literature

No common definition of healing architecture was identified across the studies, even though the

term healing architecture was prominent throughout each study and was included in each of the selected articles' titles or abstracts. However, as presented in Table 2, three of the articles did not explicitly define healing architecture and the others defined the term in a variety of ways. Further, the referenced citations offered in support of these definitions were not consistent. For example, Nielsen and Overgaard (2020) state that the environment featured in their analysis was inspired by healing architecture principles; however, these principles were not explicitly described or referenced. Without a clear definition of what healing architecture is, it is more difficult to make direct associations between clinical practice and patient outcomes. Despite these

Table 1. Summary of Included Articles.

Lead Author (Year), Country	Study Aim	Research Method	Healthcare Setting	Architecture/Design Feature	Main Findings/Conclusion
Aripin (2007), Malaysia	Review the role of daylighting design as one of the physical aspects in hospital design to create a healing environment.	The mixed method includes a literature review, desktop analysis, and pilot studies of three hospital buildings in Malaysia.	Healthcare facilities (four-bed ward examples)	Privacy, company, and dignity Views Nature and outdoors Comfort and control Legibility of space Interior appearance	There are physical aspects affecting daylighting design: building orientation, window design, access to view, visual comfort of the ward, lighting (daylight and artificial), and color.
Folmer et al. (2012), Denmark	Explore the architectural elements which support interaction between patients and relatives. These findings can inspire new ways of designing hospitals and improve the interaction between people in the hospital.	Interviews and photo documentation (qualitative methods) Systematic observation tool (quantitative)	Intensive care units	Views Nature and outdoors Comfort and control Legibility of space Interior appearance	Space for privacy: Relatives in three-bed wards were less concerned about privacy than relatives in one-bed wards. In one-bed wards, there is architectural privacy in the form of solid walls and windows that can be screened off; privacy for conversation is not experienced where the door remains open. Findings suggest that one-bed wards present a false sense of privacy and perhaps a feeling of isolation. Proximity to the patient suggest a space directly connected to the ward, which is quiet with a sofa to relax on. The influence of machines on the ward: Machines can negatively impact the interaction between patient and relative. The bed is often placed in the middle of the room, impacting sleep. The machine provides visual stimulation.
Lundin (2021), Sweden	To deepen the discourse on the complex interrelationship between "healing architecture" and "safe architecture"	Qualitative data from discussions and dialogue with psychiatric facility management and other healthcare professionals in multidisciplinary working groups during the design process	Psychiatric ward	Privacy, company, and dignity Views Nature and outdoors Comfort and control Legibility of space Interior appearance	Providing both a healing and a safe environment is an architectural challenge in the design of psychiatric wards. How architects, management, and staff evaluate and balance the two aspects will have a critical impact on the building's final design and atmosphere and thereby influence staff and patient safety as well as civil protection. Evidence is still limited when it comes to healing architecture and safety architecture.

(continued)

Table 1. (continued)

Lead Author (Year), Country	Study Aim	Research Method	Healthcare Setting	Architecture/Design Feature	Main Findings/Conclusion
Nielsen & Overgaard (2020), Denmark	To gain a deeper understanding of women's experiences of an alternative birth environment and its ability to support the concept of patient-centeredness in the care of birthing women	Semi-structured interviews	Alternative birthing room	Privacy, company, and dignity Views of nature and outdoors Comfort and control Legibility of space Interior appearance Amplly spaced room and physical facilities facilitated a form of emotional support and space to move and explore different spaces Furniture: sofa bed (for relaxation for both the woman and her partner) and traditional hospital bed Room for visitors and others Choice-free to choose support from partner, mid-wife or to be left alone	The findings support the use of principles of healing architecture and Snoezelen in birth environments and add to the evidence on how the physical design of hospital environments influences both the social and physical aspects of the well-being of patients. The environment appeared to encompass several dimensions of the concept of patient-centered care.
Mogensen et al. (2014), Denmark	Explore patients' preference for home-like interiors could be linked to a preference for textiles and textile-based furniture	Mixed method data collection based on interviews and impressions of photographs of furniture and physical samples of textiles	Outpatient lung department	Privacy, company, and dignity Views Nature and outdoors Comfort and control Legibility of space Interior appearance	The majority of the participants were satisfied with the existing interior and preferred traditional hospital material. Twenty-one percentage of participants requested interior design improvements and a preference for textile-based furniture and materials.
Simonsen & Duff (2020), Denmark	To analyze medical encounters in the context of a new purpose-built psychiatric hospital as an example of healing architecture	Patient and staff observations. Grounded in qualitative research conducted in two wards between 2016 and 2017, we explore the key material and social effects of the hospital's healing architecture and the spaces and practices it enacts.	Psychiatric hospital	Privacy, company, and dignity Views Comfort and control Legibility of space	The practice of ordering provides analytical insights into the spatial relations of healing architecture. The layout of the wards are central to this work, enabling specific patient-mediated orderings, practices, and movements just as staff seek to enact their orderings in the work of organizing and delivering care. The analysis demonstrates that spaces are an effect of local orderings that sometimes sit uneasily with the designed spatial orders of the ward.
Simonsen & Duff (2021), Denmark	Explore the staff experience and mediating role of the built environment for staff/patient interaction	Patient and staff observations. Grounded in qualitative research conducted in two wards between 2016 and 2017. Observations and semi-structured interviews with staff	Psychiatric hospital	Privacy, company, and dignity Views of nature and outdoors Comfort and control Legibility of space Interior appearance	With a focus on the nursing station at two inpatient, purpose-built wards of a new psychiatric hospital, the transparent properties of the built environment produce an environment of uncertainty and distance instead of intelligibility and closeness.

challenges, a commonality between these studies is the insistence on the importance of the healthcare environment in shaping patient experiences. With respect to these diverse healthcare environments, each study goes on to assess some of the common features described by patients, staff, or visitors, relating many of their experiences of these spaces and how they shaped their treatment, care, and/or recovery.

No common definition of healing architecture was identified across the studies, even though the term healing architecture was prominent throughout each study and was included in each of the selected articles' titles or abstracts.

Architecture and Design

The architecture and/or the design of the building identified as the principal study site was described in each study. Both Aripin (2007) and Folmer et al. (2012) explored the differences between ward units. Aripin (2007) explored differences between daylight exposure in patient rooms, reporting that patients preferred rooms with windows that were symmetrical and balanced and preferred not to occupy a bed near the window given that this proximity tended to make that bed warmer than others. Folmer et al. (2012) compared the experiences of relatives and patients in one- and three-bed wards. A surprising finding was that relatives in three-bed wards experienced a greater sense of privacy than those in a one-bed ward. Mogensen et al. (2014) explored patients' preferences for improvements to the general hospital design, textiles, and furniture. An unexpected finding in this study was that patients reported being satisfied with the existing interior of the hospital and preferred traditional, industrial style hospital furniture over the home-like furniture preferred by the designers. In contrast, the home-like furniture found in the lounge area (where partners could retreat and relax) was identified as a positive attribute of the built environment (Mogensen et al. 2014). Four of the articles (Lundin, 2021; Nielsen & Overgaard, 2020; Simonsen &

Duff, 2020, 2021) were based on studies of newly built hospital environments. Both the Nielsen and Overgaard (2020) and the Lundin (2021) studies confirmed that the study sites provided a healing environment for patients. Nielsen and Overgaard (2020) found that the hospital environment had positively influenced the social and physical aspects of patient well-being, while Lundin (2021) highlights the challenges of providing a healing, safe environment for patients and staff. The safety and comfort of healing architecture is further explored in papers published by Simonsen and Duff (2020, 2021), which highlight safety concerns in the environment and how certain design features can negatively impact staff. For instance, the use of transparent material to partially enclose the nursing station was found to interfere with nurses' ability to retreat or detach from what they regarded as intense environments out on the ward.

Designated Spaces

Each article noted how discrete rooms within the wider healthcare setting tended to be highlighted in patient or staff reports of the site, with most then investigating how these spaces shaped interactions, for example, between staff and patients. Most of the studies described interactions within patient rooms (Aripin, 2007; Folmer et al., 2012; Lundin, 2021; Nielsen & Overgaard, 2020; Simonsen & Duff, 2020, 2021), conference rooms (Simonsen & Duff, 2020, 2021), lounge spaces (Folmer et al., 2012; Lundin, 2021; Simonsen & Duff, 2020, 2021), nursing stations (Folmer et al., 2012; Lundin, 2021; Simonsen & Duff, 2020, 2021), and seclusion rooms (Simonsen & Duff, 2020). In the Folmer et al. (2012) study, the design of the room was linked to how visitors use the room, for example, in instances where relatives described barriers such as machines or other equipment that inhibited their movement in and around the space. When asked what spaces relatives would prefer, they tended to describe a space close to patient rooms with a comfortable chair, where they could have coffee in relative silence as they watched an aquarium or television as a means of getting

Table 2. Defining Healing Architecture.

Authors (Year)	Healing Architecture Definition
Aripin (2007)	The term “Healing Architecture” (Lawson, 2002) is adopted to invoke a sense of a continuous process; in creating an environment physically healthy and psychologically appropriate
Folmer et al. (2012)	No stated definition
Lundin (2021)	The physical environment that increases well-being and rehabilitation among patients
Mogensen et al. (2014)	Healing architecture is described as the patients’ healing process as it is promoted through accommodating physical surroundings
Nielsen & Overgaard (2020)	No stated definition
Simonsen & Duff (2020)	No stated definition
Simonsen & Duff (2021)	No stated definition

away from the bustle of the intensive care unit (ICU) environment. However, spaces for partners to relax and retreat were noted in only one of these purpose-built environments (Nielsen & Overgaard, 2020). Of the newer, purpose-built environments identified in these studies, all had single occupancy patient rooms and private bathrooms, which indicates a trend toward more private designated spaces in healthcare settings, particularly in Nordic countries (Lundin, 2021; Nielsen & Overgaard, 2020; Simonsen & Duff, 2020, 2021). It is also common for these sites to feature communal spaces for patients who are observable by staff (Lundin, 2021; Simonsen & Duff, 2020, 2021). Further, there is a movement away from conventional patient hospital rooms (Lundin, 2021; Nielsen & Overgaard, 2020). For example, Lundin (2021) suggests that patient rooms should be customizable so that patients can transform the space in their own way, adding that the design of patient rooms should reflect the common features of domestic environments like the home, rather than the more traditional characteristics of institutional spaces. Many studies also make note of the importance of nursing stations and how they often serve in a psychiatric environment to provide overview of patient areas. The impressions of these nursing stations were described slightly differently in the Folmer et al. (2012), Lundin (2021), and Simonsen and Duff (2020, 2021) studies. Folmer et al. (2012)

noted how the door to the nursing station was always open in their particular study site, although this was associated with some confusion for relatives visiting the space in that they remained uncertain about when they could interrupt staff. Also in this study, the author describes how the layout and design of the space enables visitors to walk through the staff work space prior to arriving at the patient wards, thereby encouraging relatives to check in with staff before visiting with the patient. Similarly, Lundin (2021) concluded that these nursing areas should be more like reception desks with no glass between patient and staff to encourage greater interactions. In contrast however, Simonsen and Duff (2021) report how the lack of privacy between patients and staff typical of newer, purpose-built environments can have a negative impact on staff in that they no longer have a space of retreat in which they might temporarily withdraw and recuperate from an intense work environment. This suggests that healing architecture should take the professional needs of staff into account as well as the therapeutic needs of patients and their carers and families. The Lundin (2021) study further illustrates the challenges of making a clinical environment both healing and safe. One example is the placement of patients’ beds, with staff reportedly preferring beds to be clearly visible when opening a patient’s door, yet patients prefer the bed to be hidden to ensure

greater privacy. Although furniture is not a part of the built environment, furniture plays an important role in clinical spaces.

Each article noted how discrete rooms within the wider healthcare setting tended to be highlighted in patient or staff reports of the site, with most then investigating how these spaces shaped interactions, for example, between staff and patients.

Views of Nature and Outdoors

Six of the articles emphasized the importance of access to an outdoor area, whether it was a secured garden or views outside. Some studies identified the direction of the view as being important, with Folmer et al. (2012) noting differences between the one-bed ward facing south with a view across town, and the southeast ward with a view of the city and harbor. Folmer et al. (2012) further notes that windows are seen as a positive attribute of the built environment making the room feel less confined. Although windows are clearly valued, depending on the climate, they can also bring in heat and light. Aripin (2007) conducted research in a site in the tropical climate of Malaysia, reporting that patients often requested to be placed in a bed away from the window to avoid the heat and light. For this reason, designs in warmer climates often feature the use of tinted glass to reduce heat and intensity of the light, while maintaining views and a sense of connection to the outside world (see also Lundin, 2021). Studies strongly endorse the therapeutic value of a room with a view, with Nielsen and Overgaard (2020) reporting how the sounds and sights of nature have a positive impact on patient's experiences of care.

Discussion

This scoping review aimed to identify evidence regarding how healing architecture impacts clinical practice and patient outcomes and map the characteristics of healing architecture in clinical contexts. Although the term healing architecture was included in each title or abstract of the

selected articles, how the concept was defined in each paper varied, leading us to conclude that no agreed upon or operative definition of healing architecture exists. In two papers (Simonsen & Duff, 2020, 2021), the authors sidestep this definitional issue by relying on the proposition offered by the architects who designed the hospital that the site in question was indeed designed and built as an example of healing architecture. Despite the enduring challenge of defining the term, we found broad agreement in the literature on the ways issues of privacy, designated space, furniture, and views of outdoor spaces such as gardens frame healing architecture in clinical practice. In general, no one architectural property can be described as the essential or definitive design feature of healing architecture nor can any specific aspects of healing architecture be definitively linked to specific health outcomes.

In general, no one architectural property can be described as the essential or definitive design feature of healing architecture nor can any specific aspects of healing architecture be definitively linked to specific health outcomes.

As noted in the Introduction section, the notion of healing architecture and the principles of evidence-based design are becoming increasingly influential in the development of new healthcare facilities (Frandsen et al., 2009; Lawson, 2010; Ulrich et al., 2008; van den Berg & Wagenaar, 2006), with many of these newer designs also drawing on the principles of patient-centered care (Bromley, 2012; Vaughan et al., 2018) designed to afford particular spatial experiences in the interest of supporting recovery (Reavey et al., 2017). Taken together, as Curtis (2010) has noted, the emergence of the notions of healing architecture and patient-centered care has inspired significant new research on contemporary hospital design and its impact on patient experience. Despite this growth in interest, significant conceptual and methodological challenges remain, as the results of our scoping review reveal. Indeed, definitional challenges remain outstanding, something that the review on healing spaces conducted by DuBose and colleagues (2018) also shows. While

developing an integrative framework for “optimal healing environments” has been explored by others (DuBose et al., 2018; Sakallaris et al., 2015), there is no such framework for healing architecture. Developing a yardstick for which future designs can be measured, based on a definition of healing architecture, would prove useful. This would create a systematic understanding on how healing spaces and architectures make a difference and for whom, in clinical practice, is just as crucial for driving new insights into the design and development of healing architecture. We regard this goal as an important means of overcoming a tendency toward environmental determinism in some discussions of healing architecture (Frandsen et al., 2012; Lundin, 2015), by making informed design decisions based on an understanding of how healing and recovery are shaped in and by clinical practice, in addition to aspects of the built environment, thereby moving beyond any claim of strict material causation. As such, we contend that investigating the *everyday uses* of newly designed spaces is critical if we wish to understand the role of architecture in and for healthcare, for example, within postoccupancy evaluations of particular healthcare facilities.

Many studies aim to foster innovation in the design of clinical spaces, often advocating the inclusion of stakeholder perspectives to do so (e.g., Annemans et al., 2017; Duque et al., 2020; Stevens et al., 2019). While this is important, improved understanding of how healing architectures, and purpose-built facilities, more broadly, are *made* to make a difference in practice, is equally critical. What is needed is fresh insights into how spaces mediate complex everyday interactions and encounters in clinical settings, and how these mediating factors may be accounted for in future design developments.

What is needed is fresh insights into how spaces mediate complex everyday interactions and encounters in clinical settings, and how these mediating factors may be accounted for in future design developments.

Maintaining greater sensitivity to the role of practice in the dynamics of healing architecture directs inquiry toward how people engage and

interact with, move through, and orient themselves toward particular material arrangements in situ. By studying healing architecture in practice—placing buildings *inside* practice as it were, or more narrowly even, *within interaction*—the physical, spatial, and architectural properties that constitute healing architecture should become more visible and analytically accessible. How healing architecture makes a difference, then, becomes a question of how it becomes implicated in different arrangements or expressions of practice. Such an approach pushes us to reflect on the design of contemporary hospital spaces, which, in turn, may promote discussions about what constitutes more feasible expectations of what healing architecture may realistically do in and for healthcare. It is also important to note that textiles and furniture are often considered relevant features of healing architecture and are typically selected by interior design professionals versus architects. We suggest that future studies of healing architecture should focus not only on user experiences or health outcomes alone, but also on how interacting parties draw upon, inhabit, orient themselves toward, react to and, as such, constitute space and care in practice. To reiterate, this focus moves analytical interest and attention away from *individual experiences* of spaces and architectural properties toward greater concern for the production of spaces in *practice*. A combination of spatial and qualitative methods, as described by Sturge et al (2021), could then be used to explore different user groups’ institutional activity spaces, including the time spent in different areas such as the garden or at window views.

We suggest that future studies of healing architecture should focus not only on user experiences or health outcomes alone, but also on how interacting parties draw upon, inhabit, orient themselves toward, react to and, as such, constitute space and care in practice.

Limitations

This review has several important limitations. A scoping review does not capture all topically

relevant publications as the search strategy is not exhaustive, nor does the review say anything about the quality of the articles that have been assessed. Further investigation is needed to evaluate the quality of the studies identified above and the impact of the build environment on patient outcomes. Therefore, we suggest a systematic review of the impact of healing architecture on health outcomes (Pati & Lorusso, 2018). Other research on healing architecture might have been relevant to include, but was explicitly excluded for its specific topicality (e.g., Asfour, 2019). Somewhat surprisingly, and despite the growing interest in healing architectures in architecture practice, it was striking to find so few detailed investigations of the origins of the term, the key claims associated with it, and, especially, the practical implications of this design approach for everyday clinical encounters. Indeed, we did not identify any agreed upon, operative definition of healing architecture. This is perhaps not something that we ought to have expected to capture in a scoping review of academic journals, and, as such, we recognize that our review consists of a limited number of studies. It does, nonetheless, suggest opportunities for future conceptual developments, particularly with respect to key definitional matters, and characteristic design properties. Furthermore, as healing architecture seems to be primarily a Nordic phenomenon, with much research for instance published in Danish (Frandsen et al., 2009), there may be peer-reviewed literature published in other languages that were not identified in this review due to the language eligibility criteria. As such, future research could explore the cultural heritage or regional phenomenon of the term “healing architecture”. The geographic bias may, therefore, also limit transferability of findings to other sites, perhaps especially to low- and middle-income countries.

Conclusion

Although there is a clear relationship between the built environment and health outcomes, healing architecture continues to be undefined. Without a definition, clear indicators or commonly agreed on design principles, future developments cannot

be systematically monitored or evaluated to prove if a given “healing architecture” is working as it was intended. While developing indicators and principles to guide postoccupancy evaluations of environments built in line with healing architecture would be helpful, we suggest and advocate for future studies exploring everyday interactions within healing architectures. Such studies would gain a stronger sense of which architectural properties become essential for patients’ and professionals’ experiences of their shared material circumstances, especially how they make a difference in practice. Indeed, as extant literature has shown, healing architectures can be experienced differently by patients, visitors, and staff, challenging the possibility of developing design approaches to healing architectures grounded solely in the views or preferences of any particular stakeholder group. For this reason, a practice-based approach would seem an especially fruitful means of establishing broader understandings of healing architecture and its forms, properties, and effects. With almost all existing accounts of healing architecture relying on qualitative interviews, scholars have generally missed the possibility of gathering insights into the situated significance of contemporary designs, as post hoc accounts inevitably fall short in capturing how, and for whom, spaces come to make a difference in practice and how the spaces of healing architecture might be made to work more effectively for all the diverse groups that inhabit it. This scoping review has confirmed the range and vibrancy of recent interest in healing architecture, just as it has identified key challenges for those seeking to build on this interest.

Implications for Practice

- There is limited knowledge of how healing architecture shapes clinical and patient experiences.
- No agreed upon definition of healing architecture was found. Without a definition, clear indicators, or commonly agreed design principles, future developments cannot be systematically evaluated.

- Further development of indicators and principles to guide postoccupancy evaluations of environments built in line with healing architecture is encouraged.
- There is a need for further studies that explore everyday interactions within healing architectures in order to gain a stronger sense of which architectural properties become important for patients' and professionals' experiences of clinical spaces, and especially how they come to make a difference in clinical practice and the delivery of care.

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Supplemental Material

The supplemental material for this article is available online.

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