

Connect, care, create: practical framework for physical environment
design for person-centred palliative care

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CONNECT, CARE, CREATE:

a practical framework for designing physical environments for person-centred palliative care

ABSTRACT

Objective

This article aims to explore architectural-rich insights derived from users' experiences within everyday practice in palliative environments and provides a practical framework for healthcare organisations, architects and researchers involved in (re)designing palliative environments for person-centred care.

Methods

An ethnographic study involving participatory observation was undertaken to gain insight into the influence of palliative environments on the diverse users' subjective experiences. This immersive research took place across multiple palliative environments, encompassing a palliative care unit, a day-care centre for palliative care, and a hospice located in Belgium. Also, informal conversations and photo-elicitation interviews were conducted with residents, family members, healthcare professionals, volunteers, and maintenance staff.

Results

Analysing the subjective experiences yielded a practical framework of four architectural atmospheres (proximity, support, engagement, comfort) intended to serve as guiding principles for designing palliative environments. To shape these atmospheres, this article elaborates on 17 spatial aspects and aligns them with real-life experiences of users within palliative environments, thereby enriching and contextualising these insights.

Conclusions

This study presents a practical framework encompassing atmospheres, spatial aspects, and overarching insights. It is augmented by supplemental material featuring real-life user experiences, all directed towards guiding the design of palliative environments in pursuit of person-centred palliative care. This article advocates for a collaborative, interdisciplinary, holistic design approach that acknowledges these considerations' interconnectedness and considers the users' multiple perspectives. Ultimately, this approach serves as a means of bridging design intentions and actual experiences encountered by users in their real-life contexts to assist healthcare organisations and architects in creating environments for person-centred palliative care.

Keywords

Palliative environments, practical framework, spatial aspects, atmospheres, multiple perspectives, users' experiences, person-centred care, human-centred design

What is already known on this topic -

- The physical environment is increasingly recognised as an important catalyst in implementing a person-centred care philosophy.
- In palliative care research, there is a gap between spatial insights on users' experiences and how they could support the design process of environments facilitating palliative person-centred care.
- There is a need for architects, healthcare organisations, and researchers to co-create and collaborate in enhancing palliative environments through ongoing interdisciplinary dialogue and shared insights.

What this study adds is –

- A practical framework that recognises four architectural atmospheres associated with spatial aspects and real-life experiences as the foundational elements for improving the spatial experiences of residents, family members, healthcare professionals, and volunteers in palliative environments.

How this study might affect research and practice –

- Ongoing research into practical design considerations, complemented by real-life experiences and outlined within a practical framework, holds the potential to foster co-creation and collaboration between healthcare organisations, architects, and researchers in enhancing palliative environments that facilitate person-centred care.

INTRODUCTION

Background

The importance of embracing a person-centred approach in palliative care is advocated internationally by the World Health Organization (1). This approach ensures that care is tailored to meet individual and subjective needs and values across physical, emotional, spiritual, and social dimensions, all with the overarching goal of preserving and enhancing users' quality of life (2). This approach should expand its purview beyond merely supporting users who reside (in) or visit palliative environments and, instead, encompass the experiences and wellbeing of healthcare professionals and volunteers who operate in these environments to deliver high-quality, person-centred palliative care (3).

It is widely acknowledged that the physical design of a palliative environment plays a pivotal role in the implementation of this person-centred palliative care by shaping the experiences of various users and consequently influencing their quality of life (e.g., 4, 5-9). Moreover, in recent years, there has been an increasing awareness of the significance of creating healthcare environments that not only fulfil functional requirements but also promote wellbeing (10, 11). Therefore, it is reasonable to suggest that the considerations governing the design of palliative environments should be attuned to diverse experiences of residents, families, healthcare professionals, and volunteers. In the realm of architecture, the concept of 'atmosphere' pertains to the sensory and emotional experiences specifically created by the built environment (12). It is about how an environment can make you feel. To generate an architectural atmosphere within an

environment and evoke specific responses or experiences from its occupants, architects frequently combine a range of 'spatial aspects' (13). These aspects influence how a space functions and the sensations it elicits.

However, unlike common building types, architects are unlikely to possess first-hand lived experiences of palliative environments to enrich their design process (14). In addition, current literature on palliative environments calls for architects, healthcare organisations and researchers to co-create and enhance palliative environments by learning from users' experiences, stressing the importance of ongoing interdisciplinary dialogue and sharing insights in every step of the design process (14-16). Such collaborations of exchanging expertise and guidance would enable healthcare organisations to comprehend and anticipate the impact of the physical design, while also empowering architects to envision and empathise with the diverse experiences of users within palliative environments. This relationship, in turn, has the potential to catalyse the creation of more human-centred palliative environments. 'Human-centred' or 'human-centric' architecture is an approach that seeks to enhance the relationship between environments and their users by placing 'humans' at the heart of the design process, creating environments tailored to their needs (17). Although 'human-centred' is sometimes used interchangeably with 'person-centred', the former takes a broader, more holistic approach that places greater emphasis on the simultaneous, diverse, and evolving needs and experiences of various users (18). Hence, we recommend that the design process of palliative environments adopts a human-centred approach to contribute to person-centred palliative care. However, two reviews investigating the impact of spatial features, aspects, or characteristics of palliative environments on users' experiences show that most studies focus only on healthcare professionals' or family members' views, often neglecting residents' or volunteers' perspectives (8, 15). Given the diverse and evolving needs of users in palliative environments (8), it is crucial to explore their interconnected perspectives to better inform the design process.

Furthermore, a human-centred approach is frequently an implicit and intuitive aspect of contemporary architectural practice but requires more explicit consideration (11). Architects require research-based input from diverse disciplines interested in how users' experiences relate to the physical design of palliative environments. These 'architectural-rich users' experiences' can evoke empathic understanding and inspiration for the design process of palliative environments. However, most academic literature is not easily accessible or applicable to architectural practice, limiting its influence (8, 14). Besides, designers prefer the depth of raw data and visual aids alongside concise and digestible text over abstract, excessively analysed and generalised insights (14, 19-21). Architects argue that critical information can become obscured when data on users' experiences is abstracted from its accompanying narratives, yet they recognise the need to organise raw data into practical themes for better information transfer (21). So, to bridge the 'research-practice gap' (22), research outcomes should be pragmatic, relevant, and tangible, focusing on diverse users' experiences to inspire design.

Objective

This article aims to explore architectural-rich insights derived from users' experiences within everyday practice in palliative environments and provides a practical framework for healthcare organisations, architects and researchers involved in (re)designing palliative environments for person-centred care.

METHOD

Research design

The data reported in this article form part of a qualitative ethnographic study led by the 1st author, an architect-researcher. This study explores how the design of palliative environments affects users' experiences. Hence, we decided to take a constructivist approach. Ethnography provides the opportunity to understand the environmental complexities that affect the provision and use of palliative care (9). We employed a participatory approach which relies heavily on the researcher-participant relationship (23) and aligns with our study's objectives and context. The utilisation of observations as a method is rooted in the choice to integrate 'reflexivity within research', which is recognised as a valid approach for investigating subjective experiences to support human-centred design solutions (24). Furthermore, we employed photo-elicitation to explore participants' experiences during interviews while utilising visual material as stimuli or memorisation (25, 26). In preparing these interviews, the concerned palliative environment was thoroughly documented via photographs and an easy-to-read floor plan that the 1st author developed. Furthermore, the architect-researcher combined her field experiences with an extensive literature review to inform the interview guide which sought to understand the synergy between users' experiences and the physical palliative environment. Subsequently, four test interviews were conducted with healthcare professionals in palliative care to ensure the proposed approach was acceptable (27). Drawing from this piloting, we concluded that employing a flexible interview guide (allowing participants in palliative care to decide what, where, when, and how long the interview occurs, or even the choice to do the interview alone or with others), along with the integration of photographs and plans, supported the elicitation of architectural-rich users' experiences. Moreover, these applied methods align with a person-centred approach, which can effectively alleviate potential participant burdens (28-30).

Data collection and recruitment interviewees

Given the particular context (29) and to build rapport and familiarisation with the participants and their daily lives (9), the researcher immersed herself in the field for 23 days in the daily activities of users of respectively a palliative care unit (n=13 days), a day-care centre (n=4 days), and a hospice (n=6 days) in Belgium. The palliative care unit accommodates 9 residents, while the hospice has 8 resident places, with an average stay of 16 days in both settings. The day-care centre hosts a daily group of 5 residents, who remain the same each week, with their lengths of stay ranging from a few weeks to several years. During these observation days, anonymous fieldnotes regarding the area of interest

were collected, as well as 1207 photographs of the palliative environments. Apart from gathering fieldnotes and photographs, 31 participants were recruited and interviewed. These qualitative semi-structured interviews encompassed residents (n=10), family members (n=6), healthcare professionals (n=7), volunteers (n=7), and maintenance staff (n=1). In most cases, healthcare professionals made initial approaches to potential residents or family members to participate in a formal interview. An important condition for residents' participation was that they were not in significant pain and capable of providing consent. All interviews occurred during the covid-19 pandemic, within the palliative environments and had a duration span from 15 minutes to 2 hours and 17 minutes. All were audio recorded, transcribed verbatim and anonymised. For this study, ethical approval was sought and all participants provided consent to participate.

Data analysis

Our data analysis focuses primarily on the voices of users within palliative environments, analysing both anonymous fieldnotes and transcripts of interview data. In addition, we incorporated the 1st author's photographs and notes collected through active participation across the various selected palliative environments. Undoubtedly, these were informed by the 1st author's architectural background. This material provides context to the researcher's perspective and can enrich insights (31).

For the analysis of informal conversations and interview data, we employed a hybrid approach that combined inductive and deductive reflexive thematic analysis based on the framework of Braun and Clarke (32, 33). Our ethnographic study builds upon a thorough literature review concerning architectural-rich users' experiences with(in) palliative environments (8). The resultant code framework from this prior study served as a foundation of a priori codes fostering our data analysis, while a posteriori codes were iteratively developed in tandem. These additional codes were either separate from the predetermined codes or expanded an a priori code. In addition, a few a priori codes were found to have little or no occurrence in the new dataset. Subsequently, all determined codes were interlinked, facilitating the identification of spatial aspects and overarching atmospheres (i.e., sensory and emotional experiences specifically created by the built environment). This process, characterised by iteration and reflexivity, engendered a blend of already familiar and novel spatial aspects. Throughout the analysis process, overarching insights were distilled to provide guidance for architects and healthcare organisations seeking to implement these findings in the design processes of palliative environments.

Finally, our objective extended beyond the mere identification of codes, spatial aspects, and overarching atmospheres and insights; we aimed to present the underlying experiences or narratives that can evoke empathy and inspiration in design practice (34-36). Therefore, incorporating quotes and photographs with annotations is crucial in making these insights more tangible, pragmatic and visually comprehensible to practitioners.

RESULTS

From research to action: a practical framework with tangible narratives

Through the analysis of experiences of various users within palliative environments, we have pinpointed four distinct architectural atmospheres that should be harnessed in the design of palliative environments to elevate the wellbeing of those who utilise them. These

include an atmosphere of proximity, a supportive atmosphere, an engaging atmosphere, and a comfortable atmosphere, and are visually summarised in Figure 1. Moreover, the data analysis uncovered 17 architectural-rich sub-themes, referred to as 'spatial aspects', which are visually depicted in Figure 1 in connection to related atmospheres.

To assist healthcare organisations and architects in creating environments for person-centred palliative care, we highlighted in earlier sections the necessity for deeper, contextual, and tangible narratives alongside the more abstract and generalisable research findings or themes (like atmospheres, spatial aspects, and codes). The integration of tangible narratives or real-life user experiences within palliative environments aims to enrich the fostering of empathy and creativity during the design phase of palliative environments. For this purpose, we utilised quotes, which are sometimes supplemented with observational notes to clarify the context or situation of the quote. Moreover, as shown in Figure 2 we integrated a photograph relevant to each quote, incorporating sketches or annotations to highlight any missing information. For example, individuals were never photographed for ethical reasons; however, there are instances where it is necessary to incorporate them into the photograph. Furthermore, we included a small floor plan indicating the exact location of the space captured in the photograph. Every quote, accompanied by both a photograph and a floor plan, exemplifies a code related to a spatial aspect, which, in turn, falls within a specific atmosphere. These 'codes' are also visually represented in Figure 1. Figure 2 provides a glimpse of a larger table (available as supplemental material), encompassing a total of 65 codes. Sharing this supplemental material with tangible narratives not only enhances transparency but also augments the findings' applicability in both research and implementation in practice.

The following sections elaborate on design considerations by defining all the architectural atmospheres and spatial aspects, and linking them to the 65 codes of the practical framework in the supplemental material. Subsequently, In the white circles in the centre of Figure 1, we also added the three fundamental overarching insights that must be considered when integrating these atmospheres, spatial aspects and codes into the design process. In the last section, these overarching insights are discussed through a practical example.

Design considerations

An *atmosphere of proximity* entails shaping an environment that emphasises a sense of closeness among users and spaces, whether within or near the palliative environment. In Table 1, this atmosphere is presented with its 5 associated spatial aspects, including a concise description.

TABLE 1			
ATMOSPHERE OF PROXIMITY	Human scale	Codes 1-2	Involves tailoring spatial dimensions and proportions to enhance human comfort, interaction, and foster a sense of home.
	Careful and flexible		Involves carefully considering location, sequences and arrangement of spaces to simultaneously accommodate spontaneous encounters and preserve moments of

	building layout	Codes 3-5	tranquillity and privacy. In addition, the layout should support the users' needs and be adaptable to various needs, usages and changes over time.
	Intuitive access and circulation	Codes 6-10	Involves creating spaces, layouts, and outdoors that are easy and pleasant to arrive, enter, move through, navigate and understand. Routes should be aligned with appropriate discretion, interaction and accessibility. This can contribute to users feeling welcome, at home and de-stressed.
	Connection to outside	Codes 11-14	Involves improving the connection between the building's interior spaces and the surrounding outdoor environment, including the immediate surroundings and the broader neighbourhood. The design should include pleasant natural views, direct access to outdoors, and accessible and inviting walking opportunities. This allows users to maintain a connection to the outside world, unwind, enjoy the seasons, and offers a chance to escape from the room at times.
	Enabling social interactions	Codes 15-21	Involves centrally positioning and invitingly designing certain indoor and outdoor spaces to accommodate and promote various forms of social interactions. Spontaneously crossing people, intersecting people at the entrance, or providing spaces to sit and eat together allows for: pleasant and supportive conversations, getting to know peers, and allowing people to share their stories and struggles.

A supportive atmosphere emphasises the importance of supporting the provision of care, autonomy and wellbeing of all users. It is about creating an environment that supports individuals through challenging moments like farewells and grieving. It aims to integrate the daily lives, practices, and traditions of all those who use the environment (see Table 2).

TABLE 2			
SUPPORTIVE ATMOSPHERE	Autonomy-supportive environment	Codes 22-24	Involves understanding how users naturally move in and interact with the environment, including those with disabilities, and then designing accordingly. Just because the deterioration process involves a loss of autonomy, it is important to users' wellbeing to encourage and support them in all areas to maintain or maximise their feelings of autonomy and safety.
	Work-friendly environment	Codes 25-28	Involves designing spaces that enhance the wellbeing of healthcare professionals and volunteers by facilitating and supporting their practical, ergonomic and emotional needs as they carry out their critical roles.
	Space to retreat, say goodbye and grieve	Codes 29-31	Involves providing users with indoor and outdoor easy-to-access, private areas that are tranquil and supportive, fostering personal conversations, farewells, the grieving process, and memorials.
	Incorporate everyday life	Codes 32-34	Involves creating an environment that promotes the daily lives of its users by providing multiple spaces for both communal and private dining, gatherings, and activities. In addition, the environment needs to respect and offer the chance to integrate cultural, religious, and social practices, traditions, and rituals.

An *engaging atmosphere* offers means of distractions and interactions to help users cope with end-of-life challenges. It achieves this by creating an environment that captivates the senses, emphasises aesthetic appeal, and incorporates fauna and flora (see Table 3).

TABLE 3			
ENGAGING ATMOSPHERE	Sensory pleasing design	Codes 35-40	Involves engaging and satisfying the human senses thoughtfully and intentionally. By considering pleasurable sensory stimuli while mitigating environmental conflicts or sensory overload, environments can create immersive and enjoyable experiences for their users.
	Aesthetically appealing design	Codes 41-46	Involves the creation of visually pleasing and harmonious environments by deliberately using colours, materials, art, forms and details, and hiding clinical and technical markers.
	Incorporate fauna and flora	Codes 47-48	Involves integrating fauna and flora, which provides valuable therapeutic and psychological benefits to users of palliative environments. Gardens with

			flowers and herbs serve as tranquil havens for relaxation, reflection, and solace. The presence of indoor plants adds to the homely ambience. Providing views of natural landscapes and the presence of wildlife can offer distraction. Furthermore, taking into account the presence of therapy animals, such as dogs or cats, provides emotional support and companionship and can help reduce anxiety.
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A *comfortable atmosphere* focuses on creating an environment that feels like home, offering privacy and intimacy, personalisation, and control over the environment. It also extends a warm and welcoming embrace to families (see Table 4).

TABLE 4			
COMFORTABLE ATMOSPHERE	Homeliness environment	Codes 49-51	Involves creating an environment that evokes a sense of comfort, warmth, familiarity, and feelings of safety, hospitality, and caring. This can be achieved through decoration, using certain materialisation, adding domestic characteristics, and avoiding institutional design features.
	Consideration for privacy, rest and relax	Codes 52-55	Involves designing nearby areas where users can enjoy personal space and solitude. This can include private rooms, secluded outdoor spaces, or a private feeling through purely aesthetic and spatial design choices. However, places to rest certainly do not always have to be separated from common areas; users like to stay connected to the rest of the group. In addition, consideration for intimacy and wellness is important because intimate and personal treatments often lead to deeper conversations.
	Ambient control	Codes 56-58	Involves creating an optimal and personalised atmosphere by letting the users regulate and manage the environmental conditions. Ideally, residents should have control over the ambient conditions in their rooms, with a preference for regulating them from their beds.
	Personal(ised) environment	Codes 59-61	Involves a personal space beyond mere bedrooms, accommodating supportive, customisable, and (temporarily) personalised environments that enhance users' quality of life during the palliative

			care experience. Moreover, the choice between single and shared rooms carries its own merits and drawbacks, including factors related to emotional support, the sharing of both sorrowful and joyful moments, and the handling of challenging situations and confrontations.
	Family-friendly environment	Codes 62-65	Involves creating an inclusive, hospitable, and supportive environment to accommodate all family members, friends, and acquaintances, regardless of their age, background, or abilities. This environment necessitates the incorporation of amenities such as self-care facilities with options for overnight stays, break-out spaces or dedicated family rooms, and amenities catering to individuals of all age groups, including children and teenagers.

Overarching insights

While this article introduces a clear structure, via the intersecting lines between the spatial aspects and the consistent use of colours from a shared palette across the four atmospheres, Figure 1 shows that this study has identified ‘overarching insights’. This implies that spatial aspects and atmospheres may overlap and share common elements or characteristics. They could also be complementary, where one aspect supports or enhances another, or they could be contrasting, indicating differences or contradictions between the aspects, such as ‘Consideration for privacy, rest and relax’ and ‘Enabling social interactions’. Therefore, the following three overarching insights are paramount to always consider during the design process of palliative care environments.

Take a holistic approach

User experiences within palliative environments are frequently influenced by multiple spatial aspects and atmospheres, as illustrated by the following quotes from an interview transcript with a resident and his wife in a hospice room adorned with cards, drawings, and photographs (see supplemental material: 4. Attention to room layout):

Resident: *Yes, that's what people have done for me, a lot of family and friends, and children who love to draw.*

Wife: *He does have five brothers and sisters. And that's our family there, with three sons (points to photographs hanging against a bulletin board on the wall at the headboard of the bed).*

Resident: *I sometimes look at the TV, and then I see it (the reflection of the photographs). Yes, I am proud of my family. We have done well, haven't we?*

Looking back at Figure 1, these quotes illustrate encompassing the spatial aspects of a 'personal(ised) environment' and a 'careful and flexible building layout'. Consequently, as shown in Figure 1, our first overarching insight is the importance of consistently integrating

all 17 spatial aspects and 4 atmospheres in a holistic manner (i.e., looking at the whole picture) throughout the design process of palliative environments.

Learn from real-life practice

Resident: *I understand why they've placed that sliding door here [see supplemental material: 23. Feelings of support and safety], it's space-saving, you see. You don't have to open and close a door, you know. But now, let me show you something. It has happened several times, so it closes like this, but when I'm here [in the bathroom], in my wheelchair, in my situation, I've been stuck between that sliding door and the wall a few times. Because I'm often here, and then they open that sliding door, and I'm somewhat trapped. I don't consider that a fortunate situation. (...) I understand that as well, you see, because that sliding door creates a sort of vestibule here, which also provides a kind of privacy. That's true.*

In this palliative environment, some residents feel less safe when using the bathroom independently, leading to a loss of autonomy. Despite the best intentions behind the design, unintended side effects on user experiences can still occur. The collected data highlight the importance of incorporating real-life experiences into practice and considering spatial aspects and atmospheres to understand the complexity required for a human-centred palliative environment. However, these experiences are not comprehensive and may not be known during the design process, often only becoming apparent once the building is in use. As emphasised in Figure 1, it is crucial to conduct ongoing research on users' experiences in real-life settings and to transform these insights into a continuous source of learning for design practice. This underscores the importance of interdisciplinary collaboration among architects, healthcare organisations, and researchers.

Consider all users' experiences

A human-centred design does not equate to a one-size-fits-all solution, as various users perceive and interact with the same environment in distinct ways. In a palliative environment, certain spatial aspects are commonly understood and perceived similarly by diverse users, such as direct access to outdoor spaces, which creates a sense of harmony. However, there can also be instances where user experiences, in relation to spatial aspects, do not align. These spatial conflicts can result in discomfort or negative experiences for some users, while enhancing the wellbeing of others. Evaluating design solutions from multiple users' perspectives is crucial to prevent potential clashes among different users' experiences, even though it may not be possible to entirely eliminate all conflicts within a building. For example, a palliative environment without private (rest)rooms for healthcare professionals and volunteers ensures their constant availability, providing residents and their families with feelings of support and safety:

Resident: *This is the best place where I, apart from home itself, of course, have been in the last few years while I've been sick. That's for sure. I feel quite good here, as far as possible. And that's due to all these factors, a pleasant aesthetic environment, the nature surrounding me, the people (healthcare professionals and volunteers) who are always*

there for me. Altogether, it makes this place, let's say, pleasant enough for me to find meaning in my day. Because for me, everything has sailed away, everything, that's something you can't explain to anyone.

However, the following quote underscores that healthcare professionals occasionally require respite for their own subjective wellbeing (see supplemental material: 26. Private (rest) spaces for healthcare professionals and volunteers).

Healthcare professional: *I don't find my peace here when I need it, let me put it that way. When you're here, you're also with everyone else, and I'd rather leave the break-out room for people who... I don't know if you knew (resident's name) who was here? That young boy? Um, for me, that was... we took care of him, and everything was fine, but then when you go outside, you suddenly... you start questioning what you're doing, and then... it's like, but then I don't know where to go. You want to hold back those tears, and someone just wants to comfort you or something, but then everything just comes out, and I don't want to do that in front of everyone. So, I take a moment *sigh*, and I go to the restroom, yes.*

DISCUSSION

Through our ethnographic study exploring the interplay between users' experiences and the physical design of palliative environments, we aimed to uncover pragmatic and relevant insights for healthcare organisations and architects. By situating user experiences within their context, it becomes possible to link the impact of certain spatial aspects to these experiences. These insights hold the potential to enhance person-centred care by (re)designing human-centred palliative environments.

Employing photo-elicitation interviews proved to be effective in providing in-depth insights and establishing a common language for discussing the influence of spatial aspects on the experiences of participants. Nevertheless, due to the specific exclusion criteria, such as the presence of conditions like dementia, certain residents in palliative environments were ineligible to participate. Therefore, there is an added value in incorporating informal conversations to attain a more nuanced understanding of the experiences within palliative care. Although the use of fieldnotes from informal conversations may not offer the same level of rigorous examination as possible with formal interviews, the informal setting can encourage the emergence of different perspectives and insights, which may not be readily apparent during formal interviews. Moreover, it should be stressed that this study only took place in Belgium, thus potential cultural and geographical differences were not sufficiently addressed. Additionally, it is noteworthy that this study was conducted during the COVID-19 pandemic, which could have influenced perceptions of these environments due to stricter healthcare regulations in Belgium at that time.

Nevertheless, this research highlighted four distinct atmospheres—proximity, support, engagement, and comfort— as guiding principles for shaping the design of palliative environments. These atmospheres are crafted by a variety of 17 spatial aspects, each contributing to various users' experiences within these environments (see supplemental material). Figure 1 has visually presented these atmospheres and spatial aspects,

providing healthcare organisations and architects with a practical framework to consider. Recognising the interconnectedness of these atmospheres and spatial aspects underscores the significance of embracing a holistic design approach, where each atmosphere and spatial aspect is significant. To bridge the gap between design intentions and real-life experiences, we underscore the ongoing necessity of promoting co-creation and interdisciplinary collaboration among architects, healthcare organisations, and researchers. This could facilitate the exchange of real-life experiences that underpin design intentions and considerations, empowering practitioners to cultivate empathy with prospective users and inspire innovation in their forthcoming designs. Lastly, to enable a human-centred approach in the design process of palliative environments, we emphasise the importance of scrutinising and incorporating the interrelationships between diverse and evolving needs and experiences of residents, family members, healthcare professionals, and volunteers.

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DATA AVAILABILITY STATEMENT

Data are available on reasonable request. This dataset is in Dutch, anonymised and available for review on request.

ETHICS STATEMENT

The consent of the Medical Ethics Committee of the Hasselt University was obtained (CME2020/097 - B1152020000022). Prior to their involvement, participants provided informed consent for both study participation and publication of the results, including their opinions.

CONTRIBUTIONS

AP, JV, and IB contributed to the conceptualisation and methodology of the manuscript. The first draft of the manuscript was written by IB and all authors were involved in revising and approving its final version. IB managed the study, provided data, and conducted the data analysis. IB is responsible for the overall content as guarantor and accepts full responsibility for the finished work and/or the conduct of the study, had access to the data, and controlled the decision to publish.

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COMPETING INTERESTS

None declared.

FIGURES

Figure 1: A practical framework to support architects and healthcare organisations in the design process of palliative environments

Figure 2: Tangible narratives of users within palliative environments linked to spatial aspects and architectural atmospheres

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