User consultation and the design of healing architecture in a cardiology department – ways to improve care for and well-being of patients and their relatives

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Abstract

Purpose: To explore, from the perspectives of patients, relatives and nurses, how an observation room in a Department of Cardiology can be redecorated and redesigned to improve the care for and well-being of patients and their relatives.

Background: Patients in modern hospitals are to a large extent met by clinical sensory impressions, such as medical and technical equipment, colourlessness, and randomly designed and furnished surroundings. Sensory impressions from such hospital surroundings are shown to be associated with unfamiliarity, which promote a negative mood and increase feelings of insecurity and vulnerability during hospitalization. It is therefore important to recognize that today's hospital environment may be interfering with quality of care and experiences of well-being.

Design: A mixed-method approach was used, based on user consultation, in order to inform the redecoration and redesign of the observation room. Data were collected through a combination of questionnaires and participant observations, including informal conversations with a total of 12 participants, including nurses, patients and relatives. Questionnaires were answered by a total of 58 patients and relatives.

Findings: The hospital environment, only sparsely decorated and very randomly designed, was found to negatively influence both the care provided and experiences of well-being. Three themes were identified as important when redecorating and redesigning the observation room: (i) The ambience of the room, including music, wall decorations and colours, (ii) The presence of nature and (iii) Privacy.

Conclusion: The patients and relatives perceive the surroundings in the observation room as significant to their well-being. Nurses identify the sensory impressions in the environment as a significant component in the care offered to the patients and their relatives.

Value: This study describes how a user consultation process can be initiated and offers a valuable contribution to how hospital environments can be redecorated and redesigned to support well-being.

Keywords
hospital environment, healing architecture, sensory impressions, nature, privacy, homeliness, care, well-being, user involvement

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**Introduction**

The design concept *Healing Architecture* suggests that the physical design and decoration of the hospital environment can support the well-being and healing processes of patients in many ways (Frandsen et al., 2009). Important features for enhancing well-being with healing architecture include attention to the ambience of a room through inclusion of natural elements in the surroundings, the presence of colours and art, as well as provision of spaces that allow for privacy and that promote social relationships during hospitalization (Frandsen et al., 2009). Motivated by this approach to spatial design, a Danish Department of Cardiology decided to redecorate and redesign an observation room in which patients and their relatives spend several hours waiting during heart examinations. An important part of this design process was consultation with the actual users of the space – patients, their relatives and the department nurses. This article presents the findings and design recommendations identified through this user consultation process.

**Background**

Patients in modern hospitals are to a large extent met by clinical sensory impressions such as medical and technical equipment, colourlessness, and randomly designed and furnished surroundings (Edvardsson, Sandman & Rasmussen, 2006; Timmermann, Uhrenfeldt & Birkelund, 2013; Timmermann, Uhrenfeldt & Birkelund, 2014). Such sensory impressions are associated with an unfamiliar and foreign environment, likely to promote a negative mood and increase feelings of insecurity and vulnerability during hospitalization (Timmermann et al., 2013; Timmermann et al., 2014a).

However, it is possible to promote the well-being and positive thoughts and feelings of the patients through the design and decoration of hospitals (Edvardsson, Sandman & Rasmussen, 2005; Uhrenfeldt, Høybye & Birkelund, 2014). The creation of more familiar and homely surroundings can reduce stress and increase patient satisfaction during hospitalization (Leather, Beale, Santos, Watts & Lee, 2003; Ulrich, 1992). Moreover, research has revealed that aesthetic decorations in hospital environments, such as art and carefully selected colours, can have a positive impact on patient satisfaction and well-being, primarily by creating positive distractions from the stress of illness and an escape from the clinical hospital ambience (Lankston, Cusack, Fremantle & Isles, 2010; Timmermann, 2014; Nielsen, Fich, Roessler & Mullins, 2017). Art and/or pictures of natural elements have also been linked to stimulation of positive feelings and associations with familiar life situations (Frandsen, Jensen & Nyland, 2014) as well as having a positive impact on patients’ experience of pain (Tse, Ng, Chung & Wong, 2002; Diette, Lechtzin, Haponik, Devrotes & Rubin, 2003). A view of nature through a window has been shown to reduce the length of hospital stays (Ulrich, 1984), evoke a sense of hope, and promote well-being of patients during hospitalization (Timmermann et al., 2013; Timmermann et al., 2014a). Further, the interior design of rooms can influence patients’ sense of security and trust (Olausson, Lindahl & Ekebergh, 2013) and impact the experience of privacy and confidentiality between patients and healthcare professionals (Barlas, Sama, Ward & Lesser, 2001; Olsen & Sabin, 2003; Karro, Dent & Farish, 2005).

This substantial body of research and the approach to design promoted by *Healing Architecture* suggest that hospitals and the people who use them may benefit greatly from the redecoration and redesign of hospital rooms and surroundings (Frandsen et al., 2009). User involvement in these processes is crucial; it adds insight into functionality and user experience of room design and decoration. User involvement in redesign also increases awareness and discussion of how sensory impressions of the hospital may impact care and the well-being of patients.
both staff and patients (Timmermann, 2014). Such increased awareness can support advocacy and may help to shift practices of care both inside and outside the hospital context.

The purpose of this study, therefore, is to explore, from the perspectives of patients, relatives of patients and nurses, how an observation room in a Department of Cardiology may be redecorated and redesigned with an emphasis on improving the care for and well-being of patients and their relatives.

Method

Design

This study uses both qualitative and quantitative approaches to explore both users’ experiences of an observation room in a hospital cardiology department and users’ suggestions for redecoration and redesign of the observation room. The qualitative research method used is participant observation, including informal conversation (Spradley, 1980; Hammersley & Atkinson, 2007). The quantitative research method consisted of questionnaires specifically developed for this study (Enheden for Brugerundersøgelser, 2005). The mixed-method approach was chosen to retrieve complimentary data: both larger patterns of preference and usage, as well as qualitative exploration of individual user perception, all allowing a more nuanced understanding of the study purpose.

Participants and setting

The participants were patients, relatives of patients, and nurses who were staying or working in the observation room of the Department of Cardiology that was being investigated. In all, a total of 12 participants were included in the informal conversations: four patients, three relatives of patients and five nurses. Moreover, 58 participants completed the questionnaires.

The observation room of the Department of Cardiology is the place where patients and their relatives stay to wait, rest and recover in relation to heart examinations. The room is located on the ninth floor (approx. 50 m²) and has four windows along one wall with a view of grey concrete walls outside the windows. The decor in the room consists of two small, colourful paintings; otherwise the walls are bare and white. The doors and closets are standardized blue, red and orange, and the curtains are white with a yellow checked pattern. There are five armchairs for patients/relatives in the room, all facing each other in a circle. There is one bed for resting, one examination bed with a curtain in front of it, and a range of technical hospital equipment throughout the room. Patients and any accompanying relatives generally spend approximately four to five hours in the room.

Data collection

Participant observations and informal conversation

Participant observations including informal conversations were performed by the first author over three days (approximately 18 hours) in order to gather an understanding of the environment and function of the room in everyday situations with patients, relatives of patients and nurses (Spradley, 1980; Hammersley & Atkinson, 2007). The observations were logged in a journal that contained notes on the physical appearance of the room, its ambience, its different functions and the challenges observed in the daily routines and interactions between patients, relatives of patients, and nurses. These notes served mainly as background knowledge and as preparation for the informal conversations.

To explore the experiences of the room and wishes for the décor and design changes, informal conversation was conducted as an integral part of the participant observation.

The inclusion criteria for participation in the informal conversations were as follows:
• participants had to be capable of giving informed consent
• participants had to be from one of three groups:
  – nurses who were working in the observation room
  – adult patients staying in the observation room
  – adult relatives of patients staying in the observation room
• for practical reasons, participants had to have the ability to read, speak and understand Danish.

The participants were recruited during the participant observation process as they were asked if they would like to engage in an informal conversation. The conversations lasted a maximum of 26 minutes due to an ethical consideration in relation to patient health concerns, such as a patient’s recovery after mild sedation or need for rest after an examination, and to avoid overburdening the nurses’ workload.

A conversation guide was developed based on the participant observations (as described above) to ensure that the individual conversations were relevant. The guide for the patients and their relatives consisted of questions such as “How do you experience this room?” and “How could this room be decorated and designed for you to feel more comfortable in it?” While the nurses were asked questions such as “How do you feel that this room could be decorated and designed for the patients and relatives to feel more comfortable in it?”

The participants were given the choice to stay in the observation room or leave the room for the informal conversation. The rationale for giving the participants this choice was that some might feel uncomfortable having this conversation in the presence of others. On the other hand, existing research has shown how it may be easier to access the nuances of how participants experience the ambiance and sensory impressions in a room when they are in the space (Timmermann et al., 2013). All the nurses, all the relatives of patients and one of the patients chose to engage in the conversation in an alternate space. The remaining three patients chose to have the conversation in the observation room. All interviews were audio recorded and transcribed.

**Questionnaires**

To complement the qualitative exploration, questionnaires were developed and handed out. However, because of the specificity of this study’s purpose, no applicable and pre-validated questionnaire existed. Therefore, the questionnaire was developed based on the informal conversations and was designed specifically for the room in this study.

The questionnaire was answered by a total of 58 participants: 33 patients (Mean age: 70.7 years) and 25 relatives of patients (Mean age: 61.8 years). The group consisted of 26 women and 30 men; 2 participants chose not to identify their gender.

The inclusion criteria for participating in the questionnaire process were as follows:

• participants had to be from one of two groups:
  – adult patients staying in the observation room
  – adult relatives of patients staying in the observation room
• for practical reasons, participants had to have the ability to read, speak and understand Danish

Development and validation of questionnaires

All suggestions collected through the informal conversations with patients, relatives of patients and nurses on how to redecorate and redesign the room became the possible
answers to three general questions in the questionnaire, which, when combined, gave the patients and relatives 30 possible answers, including the opportunity to write free text.

The questionnaire was tested by two patients and one relative of a patient, all three of whom who were interviewed about the length and applicability of the questionnaire, as well as their answers and their understanding of the questions. These interviews did not lead to changes in the questionnaire. The questionnaire was also discussed with two nurses, which led to the addition of a fourth question. The fourth question gave the participants the opportunity to write free text to share other thoughts and comments they might have.

Distribution of questionnaires
After the validation, paper questionnaires were made available for patients and relatives of patients to complete. Nurses working in the observation room helped to distribute the questionnaires. A paper format was chosen to make it easy to answer the questionnaires immediately while staying in the room. The questionnaires were available in the observation room for a period of 11 weeks.

Ethical considerations
Overall information about the project was handed out by the nurses working in the observation room. Additional information was provided both verbally and in writing for the participants engaging in the informal conversations, and they were asked to sign an informed consent, which emphasised that their participation was voluntarily, anonymous, and that the data would be handled confidentially. They were also informed that they could withdraw their consent to participate at any time. The questionnaires were answered anonymously. The project was reported to the Danish Data Protection Agency (journal number 19/44626) by the hospital and the agency’s requirements for safe storage and destruction of data were followed. The study was funded by Region of Southern Denmark as part of a postdoctoral research project.

Results
Thematic analysis was used as an approach to analysing the informal conversations (Kvale & Brinkmann, 2009). This process was initiated with several readings in order to obtain an overall understanding of the findings.

During the analysis, three themes were identified as especially meaningful when redecorating and designing the observation room: (i) The ambience of the room – music, wall decorations and colours, (ii) The presence of nature and (iii) Privacy. These themes are elaborated upon in the following sections.

Findings from the informal conversations
The ambience of the room – music, wall decorations, colours
Many patients and relatives individually describe the observation room with words such as sterile, sad and devoid of decoration, privacy and cosiness. In their narratives, several patients and their relatives describe the visual appearance and environment in the observation room in a negative way. Some even see these surroundings as a contributing factor to making them uncomfortable and probably more nervous about the ensuing heart examination.

One patient stated: “I don’t think it is cosy, I think it is a bit sad”. A relative also commented that they did not think that the hospital-like environment was calming for patients who are nervous about their examination: “You can see that it is a sick room and that might not make it better… the ones who are going to get examined, they are a little nervous
already”. Supporting this statement, another patient explained that the experience of being in the room would improve if the hospital’s medical equipment was less visible:

Well, you would have to remove some of all those hospital elements… All the gloves and disinfectants and garbage bags. It requires that you move some of all those hospital-like elements, to make it cosier. Or to get a better experience.

A nurse described the ambiance that she would like the patients to experience when staying in the room:

It is about making them [patients and relatives] feel welcome and making them relax and feeling that they are sitting in their own living room, so that they might forget that they are in a clinical setting where everything is sterile – we want them to feel completely relaxed.

Another nurse suggested music to distract the patients from nervous thoughts:

A radio for the room with music for when people start getting back from their examination… or handing out something [headphones] so it is voluntarily whether they want to listen to something… if you have some nervous thoughts… to distract them a bit.

The same strategy was also proposed by one of the patient’s relatives as a relaxing method:

In a place like this it would be reasonable to have the opportunity to put on some headphones and listen to music or something… Many have the need to lie with a set of headphones on and listen to music rather than the sick patients next to you. So that they can relax more. It might work as well as Diazepam.

In general, the participants expressed the urge for more colourful decorations on the walls to bring happiness and cosiness to the room and make it more comfortable. In the following statement by a patient’s relative, the white colours on the walls were experienced as eliciting negative associations with bad memories:

Just a few paintings… Just something subtle. …It provides a cosy feeling. Because I have some issues with the all-white colouring, I just can’t… It has left some marks from when I was a child and spent a lot of time in the hospital.

Several of the nurses expressed a similar view on the significance of colours and recognised that: “More subdued colours than the characteristic blue and red…” would be a way to achieve a living room environment, create a cosy sensation and positive distractions for the patients and their relatives.

Art and paintings on the walls were described as something that would have a positive appeal. Several of the participants agreed on this: “I like art. Abstract art. I think that when you see something you like you always get happy. And comfortable.” Another patient elaborated on some art with colour:

There could be some art on the walls in here. There could be something nice to look at… It could be abstract. It should just bring colour in here. It is always good to get something happy in. Something that is visually appealing. So that everything isn’t grey and white.
A relative explains how this decoration might help the patients fantasize and take their minds elsewhere:

And then there could be something on the walls, so it isn’t so sterile. Something with colours that makes it cosier. Because then they can get their thoughts somewhere else by looking at something a little bit more fun and fantasize about what they show. Then your thoughts wander elsewhere.

One patient felt that colours can bring hope: “I could imagine a type of clear green or something, but it can’t be dominating. A light greenish colour, because it brings hope. Instead of the cold, white colour.”

The presence of nature
Several patients, relatives and nurses wanted to see elements of nature in the room because they generally associate nature with positive emotions such as cosiness, peace and quiet, relaxation and an escape from present thoughts. Artificial plants and flowers were mentioned by one participant as a way to create positive emotions and a welcoming feeling:

You can’t have plants in here, but…I think it is important to look at something pretty. It makes you feel good inside and I know you can get a lot of artificial flowers that might make up for it… I think it’s nice with some plants. It makes the room more welcoming when there is some pretty decoration.

A nurse had the same thoughts about plants in the room: “I guess plants are not allowed in here for hygienic reasons…. However, they can contribute a calming effect for those who are especially nervous.”

Other patients and relatives would enjoy art or pictures of nature elements to bring peace and relaxation and to take their minds elsewhere. One patient explained:

I would like some pictures of nature. Some pictures of the ocean or the woods or a beach. Peace and quiet, relaxation. I would like to look at that because then I am free of speculation.” Another patient says: “I am into nature, like flowers or horses or just the woods and something like that. Then I would sit and look at them a lot and dream myself into nature.

A nurse also felt that the sensory impressions from nature could benefit the patients and their relatives in a positive way:

For example, trees or something that could compensate for the windows that are facing something that is also just white and grey. So, it is both the colouring and the fact that we all think that the nature is calming – it is good for us.

Privacy
Several patients and relatives expressed the need for privacy in the room. One patient’s relative explained that the lack of privacy in the room generates an uncomfortable feeling because everyone can hear each other’s conversations: “I feel uncomfortable because you can hear what people are talking about.” Several wished for a flexible partition wall between patients’ chairs. One patient said: “You should have partition walls, so you could sit a bit more to yourself. It needs to be more private.”
This lack of privacy in the room was also a concern for most of the nurses because it poses a challenge to the possibility of having a confidential conversation with patients and relatives:

If I was the patient, I would probably have some questions that I would not ask in this room. Because we review their examination results with them and they probably don’t think that it should be shared with everyone else in the room, but it is. We try to whisper, but…

Another nurse explained how her professionalism is undermined by the physical room: “I think I am violating their integrity with the physical environment in the room. I think it must be unsatisfying for the patients and therefore it is also unsatisfying for me.”

Patients, relatives and nurses all suggested adding a solid wall between the examination area and the other patients in the waiting area of the room, as the existing divider was only a curtain. The patients and relatives experience this lack of privacy as uncomfortable because all patients can hear the conversation between the patient being examined and the nurse. One patient explained:

The place where the examinations are performed, it should be closed all the way. When you are talking about certain things, you know that all the others can hear us. It might be uncomfortable if there is something…

A relative supported this statement saying:

And then the place where they are examined, it needs to be shut. Because you can hear everything that is being said in there, and I don’t think that is fun for those who are lying in there. I myself would feel a little uncomfortable if everyone could hear what was being talked about. Because you feel that it is not anyone else’s business what you are talking to the nurse about.

Findings from the questionnaire
The characteristics of the questionnaire participants are presented in Table 1.

| Table 1. Characteristics of questionnaire participants (n=58) |
|--------------------------------------------------------------|
| Patients | Relatives |
| Total, n (%) | 33 (56.9) | 25 (43.1) |
| Sex | | |
| Women, n (%) | 7 (21.2) | 19 (76.0) |
| Men, n (%) | 24 (72.7) | 6 (24.0) |
| missing | 2 | |
| Age, mean. years | 70.7 | 61.8 |

The results from the questionnaires are presented in Table 2 and listed according to theme and highest answer percentage.
Table 2. Descriptive results from questionnaires

| Theme                                      | Questionnaire answers according to theme | Total (n) | Total (%) |
|--------------------------------------------|------------------------------------------|-----------|-----------|
| The ambience of the room – music, wall decorations, colours | Colour on the walls                    | 29        | 50        |
|                                            | Relaxing music in the room               | 16        | 27.6      |
|                                            | Distribution of headphones for music/radio/TV on cell phone/tablet | 14        | 24.1      |
|                                            | Art/pictures of other subjects          | 9         | 15.5      |
|                                            | Abstract art/pictures                   | 5         | 8.6       |
| The presence of nature                    | Art/pictures of nature                  | 20        | 34.5      |
|                                            | Plants/flowers (artificial)             | 15        | 25.9      |
| Privacy                                   | A sort of shielding between the patients | 11        | 19        |
|                                            | Solid walls surrounding the examination area | 9        | 15.5      |

Regarding the ambience of the room, half of the patients and relatives (50%) felt that changing the colour of the walls in the room would strengthen their well-being. Approximately one-quarter of patients and relatives would like relaxing music in the room (27.6%) or the possibility of accessing headphones to listen to music, radio or to watch TV on their mobile phone or tablet (24.1%). Several participants (15.5%) requested art or pictures of other subjects, while some patients and relatives (8.6%) wished for abstract art or pictures in the room. More than a third of patients and relatives (34.5%) felt that art or pictures of nature would contribute to their feeling of well-being and one-quarter (25.9%) had the same feeling about artificial plants and/or flowers in the room. Almost a fifth (19%) of patients and relatives expressed the need for privacy between each patient and several (15.5%) wanted solid walls surrounding the examination area, instead of a curtain, in order to improve their well-being in the room.

Discussion

To complement the findings gained from the informal conversations, nine of 30 possible answers in the questionnaire are included in the following discussion and sorted according to the themes constructed.

The ambience of the room – music, wall decorations, colours

This study found that patients, relatives of patients and nurses would prefer an ambience in the room that was much closer to a sense of homeliness. It was suggested that the hospital equipment could be less visible to create a cosier room that does not look like a “sick room.” Existing research has similarly pointed out a tension between clinical sensory impressions and more aesthetic and homely ones in the hospital environment (Edwardsson, Sandman & Rasmussen, 2005; Timmermann, 2014). This research shows how aesthetics and a more homely environment influences feelings of “belonging” and of finding an existential foothold during a vulnerable life situation. An aesthetically pleasing and more homely environment appeared to be important for the patients’ experience of knowing the place and feeling familiar with the surroundings, which enabled the patients to dwell more easily and feel relaxed (Timmermann, 2014; Timmermann, Uhrenfeldt, Høybye & Birkeland, 2014).

In our study, the patients, relatives of patients, as well as the nurses all expressed a wish for some colours on the walls, either via painted walls or in the form of pictures or art. They believe that colours and pictures or paintings could make the room cosier, bring hope,
and support positive feelings or happiness, distracting users from the “sterile” white hospital environment that for some was associated with bad memories. This opinion was also strongly supported by the questionnaire results, which show that half of all patients and relatives of patients would prefer colours on the walls to promote their experience of well-being while staying in the room (Table 2). The importance of decoration in the hospital environment in the form of colours and art is also highlighted in other empirical studies, which show that greater attention to pleasing aesthetic elements in surroundings otherwise dominated by clinical utility are very important for patients’ positive thoughts and feelings (Timmermann et al., 2013; Timmermann et al., 2014b). This finding is also supported by a recent study showing that art in hospitals contributes to an atmosphere in which patients can feel safe and at the same time feel supported in their identity, which again influences patient satisfaction positively (Nielsen et al., 2017).

The questionnaire results in our study show that more than a third of the patients and relatives preferred art and pictures of nature, while art and pictures of other objects are preferred over abstract art (Table 2). This is in line with a review study stating that it is possible that patients who are ill or concerned and stressed about their health may not be comforted by abstract art, but instead may prefer nature and landscapes as a positive distraction (Lankston et al., 2010).

Listening to music was also suggested by participants in this study as a source of relaxation for patients and a means of distracting them from nervous thoughts. Both music audible in the entire room and music delivered through headphones were suggested. These findings from the informal conversations were supported by the questionnaire results in which more than a quarter of patients and relatives felt that music in the room would improve their well-being (Table 2). According to a recent review study, music was found to reduce stress, anxiety and pain in patients, therefore supporting the suggestion of music to improve well-being in patients and their relatives in the observation room (Boyce, Bungay, Munn-Giddings & Wilson, 2018). However, the same review also indicates that the beneficial effect that music may have on the patients is primarily facilitated if they choose music of their own preference and thereby music that is meaningful to each individual patient (Boyce et al., 2018). Therefore, it is possible that the distribution of headphones to each patient would have a stronger effect on their well-being than music audible in the entire room and chosen by health professionals. Our questionnaire results support this approach; a quarter of the patients and relatives of patients who completed the questionnaire felt that the distribution of headphones for listening to music/radio or to watch TV would improve their well-being (Table 2). As expressed by one relative, listening to music on headphones “…might work as well as Diazepam.”

The presence of nature
Our study shows that patients and their relatives associate natural elements with relaxation, peace and positive emotions, and that they would use such elements to help them escape the moment and dream themselves away from the clinical hospital environment. Patients and relatives of patients suggested using pictures of natural elements, artificial plants or flowers to bring feelings elicited by nature into the room. This desire for nature was also expressed in the results from the questionnaires; pictures of natural elements were preferred by over a third of the patients and relatives of patients regarding the improvement of their well-being in the room.

Our findings about the positive impact of nature on users of the hospital space are supported by other studies (Frandsen et al., 2014; Timmermann et al., 2014a). A study from
Another Danish hospital showed that when patients were given the opportunity to choose a picture for their room, the most popular pictures were the ones depicting nature because it promoted positive and happy feelings and created associations to certain situations in life and places with significant meaning to the patients (Frandsen et al., 2014). Likewise, another study found that a view through a window to a waterfront, green areas and trees resulted in similar positive emotions and a reconnection to good memories (Timmermann et al., 2014a). The patients experienced nature as calming and a way to distract them from negative thoughts and feelings, and they used the view of nature to find inner peace and joy in a vulnerable situation (Timmermann et al., 2014a). However, it is important to note that in Timmermann, Uhrenfeldt and Birkeland’s study, participants were responding to views through an exterior window of actual natural scenes and not just natural elements inside the hospital. It is interesting that from the point of view of both patients and their relatives, natural elements in the form of pictures or plants may also generate some of the same positive emotions as an actual view of nature. In the present study, there were four windows in the observation room without the possibility of creating a view of nature since the windows were facing the walls of other buildings, and this may be why none of the patients or relatives requested a view of nature through the windows. However, one nurse pointed out that because of the lack of a view, she would like to bring nature into the room instead, so the patients would still achieve the beneficial emotions that she thinks nature can bring.

A quarter of patients and their relatives in the present study requested plants or flowers in the room, and some of the informal conversations revealed that this may bring positive emotions and have a calming effect on patients who are particularly nervous. This assumption that plants or flowers may help reduce patient anxiety is supported by a study of hospital gardens in which users of the gardens expressed that trees, plants and flowers in the garden made them feel refreshed, stronger and more able to handle difficult questions and emotions (Marcus & Barnes, 1995). The participants in our study recognised that for hygienic reasons it may be difficult to have real plants in the cardiology observation room; however, they felt that artificial substitutes may result in the same response as real plants. To the authors’ knowledge, no studies have investigated this as yet.

Privacy
The findings reveal that privacy in a room is important to patients and relatives for them to communicate confidentially with the nurses and feel comfortable in the room. It was also articulated that the nurses who are caring for the patients see patient privacy as a privilege that they cannot always offer the patient, but that they feel is fundamental for the care they wish to provide. It was suggested that privacy could be improved by incorporating dividers between patients in the waiting areas and solid walls separating the examination area instead of a curtain. These suggestions were supported in the questionnaire responses as well (Table 2).

Our findings are supported by existing literature highlighting the necessity of privacy in order to establish a safe space that enables confidentiality between patients and health professionals (Barlas, Sama, Ward & Lesser, 2001; Olsen & Sabin, 2003; Karro et al., 2005). Studies have shown that if patients feel that their conversations with health professionals can be overheard by others, they may withhold information about their health that is important in relation to their examination and treatment (Barlas et al., 2001; Karro et al., 2005). Similarly, another study shows that shielding in the form of curtains increases breaches of confidentiality and that only rooms with solid walls between patients can prevent these breaches (Mlinek & Pierce, 1997).
Strengths and limitations
This study was conducted using both participant observation and questionnaires. Participants included three different types of users of the observation room in question. These three types of users were: 1) patients, 2) relatives of patients and 3) nurses. User consultation provided valuable insight into the study objective – to improve users’ experiences of the observation room’s ambience and functionality. Only 12 people participated in the informal conversations, which is a small number. However, 58 questionnaires were answered and the results of the questionnaire substantiated many of the findings derived from the informal conversations. The questionnaires were compiled specifically for this study and were validated through interviews with two patients and one relative in addition to two nurses. If more patients and relatives had been interviewed about the questionnaire, the validation may have been stronger. Another area of potential criticism is that only Danish-speaking patients and relatives were included, and this could be considered a limitation regarding cultural diversity in terms of preferences.

Conclusion and implications for practice
This study shows that patients and their relatives perceive that the sensory impressions elicited by a hospital environment impact their sense of well-being and their experience of the functionality of a clinical space. Moreover, nurses recognise that the sensory impressions elicited by the aesthetic and functional design of the surroundings may have a significant impact on the quality of care offered. According to the participants, wall decorations, colours and music as well as natural elements and privacy are key factors that could be addressed in the event of a redecoration and redesign of the observation room investigated in this study. Findings suggest that wall decorations and colours in the room may create a sense of homeliness for patients and their relatives, provide relief from the stress that a clinical hospital environment may elicit, and positively distract patients and their relatives from the emotional distress of the examination process. Music could be used for relaxation, while pictures or paintings of nature are believed to foster a sense of peace and bring calmness. The study also highlights the importance of privacy in the room, especially in being able to have confidential conversations with nurses.

This study was initiated by the Department of Cardiology that houses the observation room under investigation. The department’s management and nurses were motivated by an understanding that positive and more aesthetically pleasing sensory impressions in hospital environments are important factors for supporting users’ experiences of well-being, as well as for the quality of care provided. The results from this study will be used to inform the redecoration and redesign of the observation room with the purpose of improving the care and well-being of patients and their relatives.

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Conflict of interest
The authors declare that no conflict of interest exists.
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