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Interior design and healing architecture: A mixed-method study on the patients' preferences for interior textiles and textile-based furniture for future hospitals

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Abstract

Hospital design is today influenced by the design concept healing architecture, stating that the patients' healing process is promoted through accommodating physical surroundings. However, despite the increasing amount of research in the field of healing architecture, research on interior design and materials are rather limited. To compliment research in hospital interior design with particular focus on the use of interior textiles, this pilot study explores if the patients' preferences for more home-like hospital interiors can be linked to a preference for textile-based furniture and materials.

Through a mixed-method study, 43 patients from the outpatient-lung department at Hospital Vendsyssel, Denmark were presented with different types of furniture and materials and were asked about their preferences. Additional questions on their experience of the hospital interior were asked to guide the interpretation of the quantitative and qualitative data.

21% of the participants requested interior design improvements, and had a pronounced preference for the textile-based furniture and materials. For this particular group, the link between home-like hospital interiors and textile materials were thus established. However, a major group of the participants were satisfied with the existing interior, and preferred the furniture style of the traditional hospital interior. As this contradicts with existing literature on patients' design preferences, reasons for this were explored through the qualitative analysis. The preference for traditional hospital interiors were thereby linked to the patients' confined expectations of the hospital appearance. From this pilot study, the paper suggests new approaches and methodologies for further studies to explore the potential of material improvement in hospital interiors. Although participatory preference studies provide a good indication on the users' experience, more profound design studies are needed to unfold the experienced value of design aspects in hospital environments.

Keywords: Health-care design, mixed-methods, participatory approaches, furniture, textiles, healing architecture

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Introduction

Throughout Western Europe, the hospital buildings are in these years undergoing a significant modification. Hospital design and its effect on the patients' healing process have been recognised, and the design concept *healing architecture* is gaining ground (Ulrich *et al,* 2008; Frandsen *et al,* 2009). However, despite the still increasing amount of research in the field of healing architecture (Frandsen *et al,* 2009; Ulrich *et al,* 2008), academic knowledge on hospital interior design is still rather limited (Douglas and Douglas, 2004). Existing literature suggest that a more 'home-like' interior is preferred to support the patient-friendly experience (Horsburgh Jr, 1995; Lawson, Phiri and Wells-Thorpe, 2003), but the term 'home-like' has not been linked to particular interior design solutions. The interior, however, frames our behaviour, mood and general wellbeing, and the home-like interior also relates to the use of materials, furniture and objects that generate the room atmosphere (Böhme, 1993; Zumthor, 2006). Interior textiles may from this perspective be a potential material that can provide new aesthetic qualities to the hospital environment. Textiles are today replaced by plastic-coated upholsteries that enhance the clinical and institutional hospital atmosphere, while new cleaning-friendly textiles exist that could promote the home-like experience by providing tactile and recognisable elements to the hospital interior (Mogensen, Jorgensen and Poulsen, 2014; Mogensen, Fisker and Poulsen, 2014). However, so far this awareness on hospital interiors and the use of furniture, materials and textiles for generating a home-like atmosphere has not been acknowledged and the patients' preferences has not been studied.

To compliment research in the field of interior design and healing architecture, this pilot study will thus focus on the use of textiles in hospital interiors, and will explore if the patients' general preference for home-like interiors can be linked to a preference for interior textiles in the hospital environment. Through interviews with patients in a Danish hospital, this paper presents a pilot study exploring the patients' material and furniture preferences. Based on these results, the paper discusses new approaches to conduct design-based research on hospital interior design.

Methodology

Setting and participants

The study is explorative and based on a mixed-method approach, conducting interviews with patients in a regional Danish hospital during April and May 2014. In a waiting room at the outpatient lung department at Hospital Vendsyssel, 43 patients receiving ambulant treatment were interviewed, and asked about: their preferences for furniture; their preference for textile materials; and their general impression of the hospital interior design. The lung department was chosen for its broad variety of patients covering COPD patients, allergic patients and chronically diseased patients under ambulant observation. The patients were briefly informed about the

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interview but not about the specific focus on furniture and textiles. The group ranged between 18-75+ years of age, and counted 23 females and 20 males.

Interview setup

In order to collect mixed-method data on the patients' furniture and material preferences, the interviews included both close-ended questions for the quantitative data set and open-ended questions for the qualitative analysis. Cardboards with pictures (12x15 cm) of five different chairs ranging from low degree of textiles to a high degree of textiles (see table 1) were presented for the participants. After a moment looking through the different pictures, the patients were asked about their preference for a future hospital dayroom. This exercise was follow by open-ended questions, where the participants were asked about their reason for selecting the chair.

Table 1. Chairs presented for the participants

				
Chair 1	**Chair 2**	**Chair 3**	**Chair 4**	**Chair 5**
The Bern Chair Wooden frame of lacquered beech, with plastic upholstery. A typical design for traditional Danish hospital interiors.	**Wegner GE-290** Wooden frame of oak, upholstered with a soft woollen fabric. The shape and the wooden frame associate with hospital furniture.	**Wegner AP-27** A full upholstered seat and back, with wooden legs and armrests. The chair balances the home-like and the institutional design tradition.	**Polo** Full upholstered and soft armchair. Associate with traditional chairs for a living room. Not typical for the hospital environment.	**Spectra** A lay back armchair with a very soft seating. Included to indicate for the patients that new thoughts and ideas on future hospital design is allowed.

Note: In this table, the chairs range from a typical hospital chair as chair 1, and a very textile-based chair as chair 5. When presented for the patients, changing the numbers of the chairs randomised this range.

The second part of the interview focused on textile materials, and introduced five different physical samples (15x22 cm). The materials ranged from easy-to-clean plastic upholsteries to coarse woollen fabrics (see table 2). The participants were asked about their preference, and open-ended questions were asked in order to understand the reason behind these preferences.

Table 2: Textiles presented for the participants.

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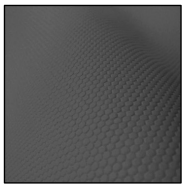	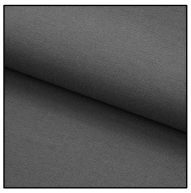			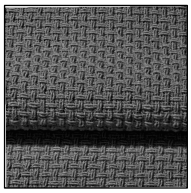
Material A	**Material B**	**Material C**	**Material D**	**Material E**
Wafer by Maharam (Kvadrat). The surface is 100 % polyurethane. A dull surface with a machine made structure of smaller dots. Represents the easy-to-clean plastic upholsteries used at hospitals today.	**Plot (Kvadrat).** 100 % Trevira CS, Polyester. The textile appears to be very light, and represents a material that with a smooth surface would seem to be easy to maintain.	**Hallingdal 65 (Kvadrat).** 100 % wool. A semi-coarse texture, representing traditional woollen upholstery that has been used for Danish classical furniture.	**Outback (Kvadrat).** 80 % wool. Boucle yarn in both directions gives an unstructured surface, with a distinctive texture and a soft sense of touch.	**Perla 2.2 (Kvadrat).** 100 % wool. Made with double threads, and has a very coarse surface and texture. The structure gives a clear visual oversized pattern.

Note: In this table, the textiles range from typical hospital upholstery as Material A, and a coarse woollen upholstery as Material E. When presented for the patients, changing the numbers of the material samples randomised this range.

Finally, the patients were asked about their experience of the interior design in general in order to evaluate if they were satisfied with the existing interior, or if the had requests for improvements. After the interviews the data was divided into a quantitative and a qualitative strand, according to the mixed method strategy.

Results

The results of the mixed-method study will be presented with the quantitative data set first in order to construe the general picture. Subsequently, the qualitative statements will be presented to evaluate the stated preferences.

Quantitative results

Furniture

In the table below, the quantitative results on the preferences for furniture is presented.

Table 3: Patients' preference for furniture

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	Total group of patients	
	n	(%)
Chair 1	24	(55,8)
Chair 2	8	(18,6)
Chair 3	3	(7,0)
Chair 4	4	(9,3)
Chair 5	4	(9,3)

As the results indicate (table 3), the patients' furniture preferences are diverse, although the majority prefer chair 1. From this preferred chair, the popularity drops as the chair's home-like associations and the amount of textiles increase. This preference for the traditional hospital armchair is generally interesting, as it conflicts with the existing literature, where patients' request more home-like interiors (Horsburgh Jr, 1995; Lawson, Phiri and Wells-Thorpe, 2003), and this will be further unfolded through the qualitative results and the discussion section.

During the interview, the patients were also asked about their impressions of the general interior design, and here 79 % of the patients expressed an overall satisfaction regarding the existing interior, while 21 % requested improvements. Dividing the participants in sub-groups depending on the interior design satisfaction provides an interesting view on the preference diversity.

Table 4. Preferences for furniture depending on interior design satisfaction.

	General interior design			
	Satisfied		*Request improvements*	
	n	(%)	*n*	(%)
Chair 1	23	(67,6)	1	(11,1)
Chair 2	6	(17,6)	2	(22,2)
Chair 3	1	(2,9)	2	(22,2)
Chair 4	2	(5,9)	2	(22,2)
Chair 5	2	(5,9)	2	(22,2)

Although the typical hospital chair (Chair 1) may be the dominating preference for the patients, who are satisfied with the existing interior, the same chair is the least preferred by the patients' who are requesting improvements. The home-like, textile-based chairs (Chair 3-5) are instead the main preference for the 21% of the patients, who also have a preference for improved hospital interiors. This group furthermore corresponds to the literature, where patients request more home-like interiors, and for these change-oriented patients the link between preferences for home-like interiors and a preference for textile-based furniture and materials may be suggested. The general high degree of interior design satisfaction is also an interesting perspective in this study, and the patients' reason for this satisfaction, will be further unfolded through the qualitative results and the discussion.

Textile materials

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In the same structure as with the chairs, the participants' preferences for textile materials are here presented.

Table 5: Patients' preference for textile materials

	Total group of patients	
	n	(%)
Mat. A	12	(27,9)
Mat. B	11	(25,6)
Mat. C	14	(32,6)
Mat. D	3	(7,0)
Mat. E	3	(7,0)

The results on the patients' preference for textile materials generally indicate an overall preference for traditional woven textiles (table 5), with a smooth and even texture (Mat B and Mat C), but also the plastic coated fabric (Mat A) is amongst the preferred materials. The materials with a coarse textile structure (Mat D and Mat E) were considered least popular.

Table 6. Preferences for materials depending on interior design satisfaction.

	General interior design			
	Satisfied		*Request improvements*	
	n	(%)	*n*	(%)
Mat. A	11	(32,4)	1	(11,1)
Mat. B	8	(23,5)	3	(33,3)
Mat. C	10	(29,4)	4	(44,4)
Mat. D	2	(5,9)	1	(11,1)
Mat. E	3	(8,8)	0	-

As with the preference for furniture (table 3), there are a diverse variety of preferences for materials, and this variety is becoming more profound, when the patients are divided in regards to their interior design satisfaction. The patients who are satisfied have a remarkably stronger preference for the plastic material (Mat A), while the patients who are requesting improvements prefer the woollen textiles (Mat C).

Quantitative results – summary

In this pilot-study, the quantitative results highlight two interesting findings. First of all that the link between preferences for more accommodating, home-like environments and the preference for textile-based furniture and materials can be established for a smaller group of participants (21 %). Secondly, that a large group of patients (79 %) were satisfied with the existing interior, and had a preference for the traditional hospital furniture and materials. Conflicting with existing literature, this finding is particular interesting in regards to this study on hospital interior design and textiles, but also in regards to future studies on patients' preferences for hospital design. This aspect, will thus be further unfolded through the qualitative results and the discussion section.

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Qualitative results

The quantitative results have provided an overview of the patients' stated preferences, but has also indicated certain diversity. Through the next two sections, this will be unfolded by relating to the patients who are *'Requesting improved interiors'*; and the patients who are '*Satisfied with the existing interior'*.

Requesting improved interiors

In this study, the group of respondents who requested improved interiors also had a strong preference for home-like furniture and woollen textile materials, and as they correspond to existing literature, their concerns regarding furniture and materials are essential to address. When asked why they had chosen the textile-based objects, the primary response emphasised that the new types of furniture and the woollen textiles would make the hospital more cosy and home-like, and that the furniture would be more comfortable to sit in for a longer period of time.

> *"It would be nice to have more colours, more cosiness, natural materials and such. Maybe something like a lounge, with a cosy couch instead [of the current chairs]"* (Female, 25-39)

The specific material qualities of the furniture or the textiles, however, were most often not emphasised directly by the patients, and the aesthetic dimensions seemed difficult for the patients to articulate. Still this group of patients were interested in changing the current experience of the hospital environment, although they found it difficult to verbally express. The patients' preferences and interior design concerns fundamentally emphasise the importance of a less dull and institutional environment, where textile materials were found as a particular preference.

Satisfied with the existing interior

The group of patients who were satisfied with the existing interior also had a preference for the traditional hospital furniture and material, and although this evidently may relate to an actual preference, the qualitative part of the interview indicated that their preference in most cases were linked to their expectations rather than being a profound preference.

> *"I think it [the interior] is appropriate. It is fine. A table and a chair that is all you need"* (Male, 25-39)

The patients expressed that they found the interior appropriate, but indicated that they had no expectations or concerns regarding the appearance of the interior or the furniture. Some of the patients even explained that the hospital should not be luxurious facility, as they considered some of the comfortable home-like chairs. The furniture should just be comfortable to sit in, and as it was a hospital premises they expected a traditional hospital interior. Based on this perspective, the

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profound interior satisfaction may therefore be related to a low degree of expectations towards the hospital environment.

Discussion

The overall purpose of this study was to explore if the patients' preference for home-like interiors could be linked to a preference for textile-based furniture and materials. The quantitative results indicate that this may be the case, although it only constitutes 21% of the respondents. Furthermore the study found that the patients' preferences were closely linked to their expectations and that this could explain the preference for the traditional hospital furniture and materials. Concerned with this expectation-controlled preference, Bate and Robert (2007) argue in regards to experience-based hospital design that it is no longer sufficient to meet the patients' expectations but to exceed them (Bate and Robert, 2007). If the patients' baseline expectation is low, this will affect their stated satisfaction, and as is shown in this study also their preference for interior design objects.

Although it is only a smaller part of the respondents who in this pilot study prefer textiles and textile-based furniture, they are supported by literature and architectural theory. In an interview study by Caspari, Eriksson and Nåden (2011), a range of 'aesthetic experts' (artists, architects, designers, etc.) emphasised that the physical environment should be accommodating and that furniture of cold materials are not preferred from an aesthetic point of view (Caspari, Eriksson and Nåden, 2011).

Concerned with this diversity, this study highlights an interesting conflict in regards to preferences studies and patient participation. If the patients stated preference should be acknowledged, the hospital interior should remain as it is today, and if the 'experts' and the critical patients should be acknowledged, the home-like environment should constitute future hospitals. This perspective generally challenges the use of preferences studies, and it should be considered if the method could be strengthen in combination with design-related methods. In a study by Leather *et al* (2003), a re-designed waiting area was compared to a traditional waiting area, and here the patients were experiencing a greater satisfaction in the re-designed facility. The same affect would possible occur in a study on interior textiles, if the patients were presented with real physical changes in the hospital interior, and not just pictures of furniture and material samples?

Preference studies may provide initial knowledge on the patients' concerns regarding certain design aspects, but it seems difficult to explore design changes and potentials based solely on preference studies. New approaches could thus include more focus on the patients' experiences rather than their preferences, and studies could thus benefit from full-scale mock-ups as in the study by Leather *et al* (2003). This would evidently change the patients' experience, and evaluating design-based studies like these would provide new insights on the potential of interior design improvements.

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Conclusion

This pilot-study aimed to explore if the patients' preference for home-like interiors could be linked to a preference for textiles and textile-based furniture. For 21% of the patients this link could be made, but the large group of patients, who were satisfied with the existing interior and preferred the traditional hospital furniture, is a particular interesting finding in this study. As this contradicted with existing literature, reasons for this was found in the qualitative interviews, and their preferences were thereby linked to low baseline expectations. On the basis of this study, new approaches to conducting additional studies on materials and hospital design have been suggested, emphasising the need for design-based methods and full-scale mock-up studies. With the experiences from this pilot study new research studies may be developed for testing and exploring the potential of interior design and materials in regards to healing architecture.

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