Colour design in healthcare environments

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ABSTRACT

Colour design is a powerful tool in the creation of pleasant and navigable environments. This research analyses the use of colour in hospitals and how colour design could enhance a desirable ambience. It focuses on those areas of hospitals used by patients, staff and visitors, from main entrance and circulation space, to wards and day rooms (non-specialist / non-clinical areas). The aim is to establish principles of colour design for navigation and creation of pleasant environments. This paper purports to expand on colour issues in healthcare environments based on expert audits, site surveys, interviews and consolidation of previous knowledge.
Keywords: Colour in hospitals; colour and interiors; colour design.

1. INTRODUCTION

The impact of colour on peoples' perceptions and responses to the environment are well documented.[1] In the context of healthcare environments, colour can improve the overall experience of patients, staff and visitors. Colour is also a powerful tool for coding, navigation and wayfinding. The visual environment, including colour design, is a vital element influencing patient recovery and hospital staff productivity. Healthcare environments also need to improve accessibility for staff and patients to promote a sense of well being and independence.

There have been a number of reports of patient recovery rates being improved by particular elements of the visual environment. These include the use of colour in interior design, the display of pieces of art and the provision of sunlight and of attractive views out.[2, 3, 4] These issues are particularly important for old or visually impaired people, who may require longer to understand visual information and have less confidence in using environments. Ensuring optimal and appropriate colour design for healthcare environments is therefore a vital element.

Colour in healthcare environments has been used mainly to create ambience or to complement wayfinding in the United Kingdom.[5] In terms of ambience, colour is used to create pleasing and welcoming environments with an atmosphere of cheerfulness, a feeling of calmness and well being. Clevedon Hospital in Bristol is one of these designs enhancing "welcoming" and "homely" patient waiting areas by means of warm colour tones (longer wavelengths of the visual spectrum).[5] Using colour has also been highly associated with non-clinical, non-institutional appearance by the designers. Colour also promotes child friendly atmospheres and was extensively used in children's hospitals to create colourful environments. Birmingham Children's Hospital in Birmingham describes its colour usage as: "predominantly white walls and ceilings are complemented by occasional bold, bright colours, supporting and reinforcing the atmosphere of cheerfulness encountered throughout the hospital."[5]

In terms of complementing wayfinding, colour is used to identify a variety of things including different levels of a hospital, different areas and zones within a hospital and routes for navigation. One example is Gloucestershire Royal NHS Trust in Gloucester which uses a palette of twelve wall colours with varying strength or subtlety for a range of areas in a large acute city hospital for wayfinding.[5] In Bristol Royal Hospital for Children in Bristol, planes of colour were added to the external elevations to provide a distinctive image for the outside of the building. Sunbreakers on the south and south-western elevations were coloured underside giving vivid shades and vibrancy to the building's exterior. The colours of the sunbreakers were derived from the interior design where each

level of the hospital had its own colour identity.[5] This way of coding the elevation of the building certainly aids cognitive mapping which is useful for wayfinding inside buildings.

2. METHOD

This research investigates the main issues of colour design in the creation of pleasant, accessible and navigable hospital environments. It focuses on those areas of hospitals used by patients, staff and visitors, mainly on non-specialist / non-clinical areas. The areas analysed are entrance areas (including reception, waiting areas and other public amenities), circulation areas (corridors, staircases, elevators and escalators) and care areas (including wards, day-rooms and staff rooms). The research concentrates on how colour is used to create ambience and how colour may aid wayfinding (including identifying, zoning and cognitive mapping).

After consolidating prior knowledge on colour usage in healthcare interiors from literature review, a total of eight hospitals were visited in the United Kingdom. Six of these hospitals were in and around London, which included two general hospitals, three teaching hospitals and one private hospital. Two of the visited hospitals were outside London; one general hospital in Plymouth and one in Sheffield. Four complementary visits were conducted in hospitals in Ankara, Turkey, which included one general hospital, two teaching hospitals and one private hospital. Issues, solutions and problems concerning colour usage were found similar in both countries, thus all hospital visits were analysed as a whole. A total of twelve hospital visits were completed to gather data for this research.

Data gained from expert audits, site surveys and interviews with staff, patients, visitors and facilities managers provided an understanding on how colour was used and what more could be done in healthcare environments.

3. RESULTS

Entrance areas

Entrance lobbies are important for orientation. To feel confident and comfortable with their environment, patients and visitors need to clearly see important elements of that building, such as staircases, elevators and the reception desk. In order to achieve this, these elements need to contrast clearly with their surroundings by using different colours. A direct line of sight to important building elements is also desirable. In an entrance lobby, directional signs should be kept to a minimum by only including essential information so that visitors can be independent, working out for themselves where to go. Waiting areas accommodating patients and visitors should contribute to a relaxing and calming ambience, as many people would be innately suffering from stress due to their cause of being in a hospital. Furniture, colour and lighting can contribute to alleviate stress in waiting areas. Comfortable seating with flexible configurations of small group arrangements could provide a friendly, welcoming atmosphere. Providing outdoor views would help distracting anxious and stressed patients and visitors. The colours being planned for entrance areas should be tested under both daylight and artificial light conditions planned for the area. E.g. Some beige or neutral tones can take on very unattractive green or orange hues under different types of lighting.

Circulation areas

Circulation areas are where corridors, elevators and staircases are located. In these areas, it is important to satisfy clarity of direction and enough visual interest to ease the stress of wayfinding. Corridors in hospitals present various issues like long travelling distances, moveable equipment and trolleys causing wear and tear, clutter due poor storage areas and inappropriate lighting. Long travelling distances may also cause stress due to insecurity of being on the “right path”. In order to overcome this, signage containing important information should be continued in the corridors. Although simply putting up signs will rarely solve wayfinding problems, they form a key part of any wayfinding system.[6, 7] Due to ethnic diversity, hospitals especially in bigger cities, might have multiple languages spoken which should also be taken into consideration while designing signage.

One other way to aid wayfinding and improving the ambience in corridors is applying colour on one side (one wall) of the corridors.

Cognitively visualising the layout of a building is usually referred to, as cognitive mapping.[6] Cognitive mapping is a process of organizing spaces. The most efficient strategy for cognitive mapping in hospitals is to introduce clear and distinct landmarks as mental anchors. These landmarks could be artworks only appearing at a certain lobby, junction or corridor. Colour may also be used to mark different places in hospitals. The important issue is to restrict the amount of artworks or colours used, so that they could stand out as distinct elements. If colour is used to mark spaces, the application is called colour coding.

There are two problems encountered in colour coding: colour coding not being noticed or recognised by the users and colour coding dominating the environment. It is essential to identify why and for whom the colour coding will be of use. If colour coding is for patients and visitors, it should be easy to comprehend and should not exceed more that a few colours. If colour coding is for the hospital staff (e.g. security staff, porters) in big hospitals, so that they could identify where they are, then more complicated colour schemes could be used, provided that staff could be briefed on the issue. In any case, it is strongly recommended to use simple schemes with few colours to avoid confusion. Every colour (hue) should only be used once and using different shades, tints or tones (brightnesses or saturations) of the same colour (hue) should be avoided. This would help to prevent confusions while comprehending to the colour coding system and referring to specific colours verbally. Colour coding is a tool and should not become a domineering factor overriding the visual environment. One way to provide this is to limit the usage of colour in space (e.g. on one wall of a corridor, instead of the whole corridor). Careless use of colour coding may cause extreme visual noise. It should always be kept in mind that the need to use colour usually occurs when the information has an ambiguity or confusion to be perceived which could be diminished by multiplicity of colours, thus the ambiguity in reading the information is minimised.

Care areas

Care areas should be reassuring, providing a feeling of excellence of medical care combined with physical and emotional comfort. An ambience that provides a feeling of warmth and relaxation is important. Data from this research underlined main issues to be considered in a ward design as: obtaining visibility of patients from nurse stations and vice versa, ensuring privacy for patients, providing low noise levels, satisfying patient control of their environment (e.g. controlling the sunlight, bed side luminaries, the TV, phone etc.), allocating enough space for visitors and allowing natural light and views out.

Interviewed patients reported a colour preference for white with its connotations towards cleanliness and hygiene, especially on textiles like bed covers and bed-sheets. They also stated they would like to be in an either “home-like” or “hotel-like” environment. Caution should be taken not to over-use white or any colour and to ensure a certain amount of visual variety in interiors to provide enough visual interest.

Experienced hospital facilities managers and nurses reported certain colour preferences for either practical or diagnostic reasons. In dermatology wards, oranges were not preferred as it would conceal the skin treatments, which usually tend also to be orange. Staff in dermatology units also thought that reds and oranges made patients feel itchy, while blues seemed to be relieving itchiness. In cardiology wards, blues were not preferred as it hindered diagnosis of heart-attacks where patients’ lips would turn bluish. Similarly, in maternity wards, yellows were not preferred as it hindered the diagnosis for jaundice. Facilities managers also found out green to be a useful colour for floor finishes, as it showed body fluids, thus preventing accidents due to slippery floors.

4. CONCLUSIONS

Improving colour design of hospital spaces, particularly entrances, circulation areas and wards will contribute to healthcare environments by improving the quality and the overall experience of patients as they are looked after and move between different types of care. This will also bring benefits like enhanced patient recovery and staff productivity. Ease of navigation and wayfinding will

also promote faster and easier access, reducing wasted time and further improving productivity. Further research on healthcare environments would promote hospital designs that would benefit the whole of the society.

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