

A Study on the Impact of Color Consideration and Interior Designing on Patient Satisfaction in IPD of A Multispeciality Hospital in Gujarat

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Abstract

Background: The physical environment of healthcare facilities plays a crucial role in influencing patient outcomes and satisfaction. Among environmental factors, colour consideration and interior design are increasingly recognized for their impact on patients' psychological well-being, stress levels, and recovery process. However, many hospitals continue to rely on conventional designs, often neglecting evidence-based colour and interior strategies. This study aims to assess the impact of colour consideration and interior designing on patient satisfaction in inpatient departments (IPD), with special reference to gynecology, pediatric, and cardiac wards in a multi-speciality hospital in Gujarat.

Methods: A descriptive qualitative research design was adopted. Data were collected through structured interviews with a panel of 13 experts comprising clinicians, hospital administrators, nurses, psychologists, architects, hospitality managers, and a Vastu expert. Content analysis was used to interpret expert opinions regarding colour preferences, interior design elements, and environmental modifications in hospital wards.

Results: Findings indicate that light and soothing colours such as blue, green, pink, and pastel shades are preferred across wards due to their calming and stress-reducing effects, whereas dark and overly bright colours are discouraged. Pediatric wards benefit from brighter and more engaging colours and decorative elements, while cardiac wards require calming tones to promote rest. Interior design elements such as nature-based images, appropriate lighting, plants (except in pediatric wards), and comfortable furniture significantly contribute to a homely and healing environment. Additionally, the use of instrumental music and thoughtful spatial arrangements further enhances patient comfort and satisfaction.

Conclusion: Colour consideration and interior design significantly influence patient satisfaction and perceived well-being in hospital settings. Implementing evidence-informed design strategies can reduce patient stress, enhance recovery experiences, and improve overall healthcare quality. Hospital administrators and designers should move beyond traditional white-dominated environments and adopt patient-centered, aesthetically supportive design approaches.

Keywords: Healthcare management, patient satisfaction, hospital design, colour psychology, interior design, healing environment

Introduction

The Color of our surroundings can both create stress and ease the stressed in life. Many of the effects of Color on our moods may be the result of social and psychological associations with a particular Color. Color as property of designed environments may not have intrinsic meaning. Much research has demonstrated that healthcare occupant-patients, users and staff experience considerable stress, and one of the major stresses is produced by poorly designed physical environments. Research has shown that certain Colors directly affect human emotions, human feelings and human behaviors (Burling, S. 2009). To better explore this belief, researchers developed a theory called the psychology of Color which is concerned with the effects that specific Colors have on individuals' moods, emotions and behavior. As a fundamental element of the physical environment, Color in healthcare setting is increasingly considered as an environmental factor that can impact users' and staffs' stress, safety, fatigue and way finding. On the contrary, Color palettes have also been found to positively affect people's healing processes as well as increase the work efficiency of healthcare staff.

Color consideration for the wards:

Image of nature, shown in number of studies to distract patients, reduce stress and alleviate pain, can be used to great advantage. The Color of walls should be soft earth tones, yellows, greens or blues, which all promote a calming effect. According to several environmental studies, views of nature significantly reduce stress. If windows aren't available, images of natural landscapes and gardens, versus abstract paintings, work well. The physical environment has a direct effect on the healing process. It promotes more efficient healing, resulting in shorter stays, faster recovery of the patient, and improved staff performance.

Problem Statement

- Lack of concentration on the Color consideration while applying on the walls and ceilings in the hospitals
 - Lack of consideration while designing the wards
 - Trend of white Color are still being followed in many hospitals
- Lack of effort in providing homely feeling to the patients.

Purpose

The purpose of this study is to explore how one environmental feature, namely Color and interior design, may impact patient recovery in the hospital. Designers have a responsibility for creating spaces that will help patients to become healthier in a shorter amount of time. Poor design is believed to be associated with anxiety, delirium, elevated blood pressure, and an increased intake of pain medication. This research aims to provide the interior design profession as well as the medical profession with a source of knowledge that will provide evidence about the physical environment's impact on patient well-being. It is hoped that this study will demonstrate that a designer's personal preference for a particular Color should have much to do with the selection of Colors in hospitals. Colors should be chosen based upon their ability to aid in the patients' recovery process.

Research Methodology**Objectives of the study:**

- To determine the Color consideration for walls, ceiling bed sheet & accessories with special reference

to Gynecology, Pediatric and Cardiac ward in hospital

- To focusing on designing of walls & ceiling and layout of floors including direction with special reference to Gynecology, Pediatric and Cardiac ward in hospital
- To determine the types of music may be played in wards with special reference to Gynecology, Pediatric and Cardiac ward in hospital
- To determine the white Color may be encourage as a symbol in hospital

Scope of the study:

- It being considered that Gynecology which is related to female, pediatric related to children and cardiac ward related to aged patients the Color and design are considered
- This study has focused only in the Color and design of the wards

Research design:

- Descriptive qualitative research

Expert Panel:

- Looking at the nature, the panel of thirteen experts is prepared from physician (2), hospital administration (2), nursing (2), Psychologist (2), manager of hospitality (2), architecture (2) and Vaastu Shastra (1).

Data collection:

- **Types of data:** Primary in nature in form of expert opinion
- **Method of data collection:** Data are being collected by structured interview method
- **Tools for data analysis:** Content analysis for qualitative research

Benefits of the study:

- Hospital administration can practice benefits in reducing stress of the patients by applying Colors and designs in the wards especially in Gynecology, pediatric and cardiac wards
- Benefits can be achieved in form for patient's satisfaction
- Color and interior designing can be used reduce the stress of the patients
- Furthermore, study can be done on the basis of these study
- Researcher will get the benefit to expand this concept in other wards

Limitation of the study:

- This study will only be helpful for the Gynecology, Pediatric and Cardiac wards
- The focused area were Color and interior design only
- Constrain of time and funding won't be able to include more diversity

Scope for future:

- Content analysis for qualitative research is can be used to check the effectiveness of proposes intervention.

Ethical:

- This is the survey-based study so ethical approval is applicable as there is no intervention in this study.

Results and Discussion

Related Color Consideration

Color Consideration for Walls:

- **According to Psychologist:** Pink gives feminine look, white gives cleanliness, blue, green, oranges,

yellow its give natural feeling and light Colors

- **According to Hospitality:** White indicate purity, cleanliness while yellow, orange, blue, cream and light Colors are soothing Colors
- **According to hospital administrators:** White indicates neat and clean type of feeling while blue give effects of water and open sky and green gives the feelings of garden and yellow, cream and light Colors are cool and calm Color. Pastel shade kind of Colors can also be used because the requirement of the reflection of light is to its minimum so such Colors could be used instead of white. As pastel shade of Colors also reflects the light to the minimum as well as absorbs in the right amount just as the need should be.
- **According to Architectures:** Blue, white, green, orange, light Colors
- **According to Astrologist:** Blue, green helps in healing process while pink, cream Color, light Colors are cool Colors
- **According to Clinicians:** Pink give the feeling of feminine, white hygiene and cleanliness while blue, green, oranges, yellow are soothing Colors which will patients in reducing stress level
- **According to Nursing:** Pink, white, blue Color because it blooms the mind and eliminates blue in retina, green is the cool Color and orange, yellow, light Colors are preferred by them.

Modal Value:

- **Pediatric ward:** After the analysis of the check list which was filled up by the panelist, the mode value comes 3 (agree) for the light and bright Colors and 2 (disagree) for the dark Colors.
- **Gynecology ward:** The mode value is 3 (agree) for the light Colors and 2 (disagree) for the dark and bright Colors.
- **Cardiac ward:** The mode value is 3 (agree) for the light Colors while 2 (disagree) for the bright and dark Colors.

Do's:

- Use soothing Colors
- Use attractive Colors
- Walls must remain neat and clean

Don'ts:

- Not to use fade and pale Colors
- Never used dark Colors in hospital

Remark:

- **Pediatric ward:** Highly recommended Colors for this ward are blue, bright Colors by the panelists.
- **Gynecology ward:** Highly recommended Colors for this ward are pink, blue, orange, and light Colors by the panelists.
- **Cardiac ward:** Highly recommended Colors for this ward are blue, white, green and light Colors by the panelists.

Color Consideration for Ceiling:

- **According to Psychologist:** Always White because it a symbol of peace and it reflect hygiene.
- **According to Hospitality:** White reflects purity, cleanliness.
- **According to hospital administrators:** White, light blue are soothing Colors.
- **According to Architectures:** Light Colors are calm and look good to the eyes.
- **According to Astrologist:** White absorbed heat

- **According to Clinicians:** Light or cream Colors absorbed heat and it is calm.
- **According to Nursing:** Blue, white, light Colors these are the soothing Colors which helps patients in their recovery process.

Modal Value:

- **Pediatric ward:** After the analysis of the check list which was filled up by the panelist, the mode value comes 3(agree) for the white and light Color and 2 (disagree) for the bright Colors.
- **Gynecology ward:** The mode value is 3(agree) for the white and light Colors and 2(disagree) for the bright Colors.
- **Cardiac ward:** The mode value is 3(agree) for the white and light Colors while 2(disagree) for the bright Colors

Remark:

According to the panelist they recommended light and white Color for the ceiling for all three wards and in review of the literature there is no such evidence were found related to the Color consideration for the ceilings.

Color Consideration for Bed Sheets:

- **According to Psychologist:** Blue, pink, light Colors, florets prints give feeling of home.
- **According to Hospitality:** White, light Colors, florets prints it shows standards, quality and welcome feeling to the guests.
- **According to hospital administrators:** White, light blue, floret prints are the Colors which give homely feeling to the patients.
- **According to Architectures:** Light Colors, florets prints mostly all these are the fashion going on and people always like change.
- **According to Astrologist:** White gives the feeling of cleanliness and purity.
- **According to Clinicians:** Light or cream Colors, florets prints all these look good to the eyes and patients feel welcome and it reflect patient centric feeling
- **According to Nursing:** Blue, white, light Colors are which gives calm effect and even reduce the stress by using these types of bed linen.

Modal Value:

- **Pediatric ward:** After the analysis of the check list which was filled up by the panelist, the mode value comes 3(agree) for the florets prints and light Color and 2 (disagree) for the bright Colors.
- **Gynecology ward:** The mode value is 3(agree) for the florets prints and light Colors and 2(disagree) for the bright Colors.
- **Cardiac ward:** The mode value is 3(agree) for the florets prints and light Colors while 2(disagree) for the bright Colors

Remark:

Florets print and light Color bed sheets are being recommended by the panelist from for all the three wards. There is the absence the statement related to the Color of the bed linen in the literature review.

Related Interior Designing**Interior Designing for Walls:**

- **According to Psychologist:** Frames, posters and pictures which lead to gods and should be kept in order to give the patients a ray of hope and to have courage, natures, scenery, cartoons gives homely

feeling.

- **According to Hospitality:** Frames, posters and pictures of natures, scenery, paintings all these gives appeal to the guests and look luxurious.
- **According to hospital administrators:** Frames, posters and pictures of natures that indicates more positivity and spread it goodness, scenery, paintings its portraying positive vibes.
- **According to Architectures:** Frames, posters and pictures of natures, scenery, sculptures paintings because everyone like decoration in their rooms and nobody likes empty walls.
- **According to Astrologist:** Frames, posters and pictures of Gods, natures, scenery, sculptures paintings
- **According to Clinicians:** Frames, posters and pictures of natures, scenery, sculptures paintings, cartoons all these spread positivity in the rooms and patient feel closer to the natures.
- **According to Nursing:** Frames, posters and pictures of natures, scenery, sculptures paintings, cartoons all these link the patient to the external environment and feel closer to the nature.

Modal Value:

The mode value is 3(agree) for frames, picture, paintings, etc. for all the three wards.

Remark:

According to the panelist the frames, posters, pictures, etc. can be used to decorate the walls of the wards and even the modal value support this. But no evidence was found related to this in the literature review.

Interior Designing for Ceiling:

- **According to Psychologist:** POP (Plaster of Paris), Stickers, Free Hand Designs
- **According to Hospitality:** POP (Plaster of Paris), Stickers, Free Hand Designs because it gives fancy looks.
- **According to hospital administrators:** POP (Plaster of Paris), Stickers, Free Hand Designs
- **According to Architectures:** POP (Plaster of Paris), Stickers, Free Hand Designs because latest trend must be followed everywhere.
- **According to Astrologist:** POP (Plaster of Paris), Stickers, Free Hand Designs
- **According to Clinicians:** POP (Plaster of Paris), Stickers, Free Hand Designs
- **According to Nursing:** POP (Plaster of Paris), Stickers, Free Hand Designs

Modal Value:

- **Pediatric ward:** After the analysis of the check list which was filled up by the panelist, the mode value comes 3(agree) for POP, stickers and free hand designs.
- **Gynecology ward:** The mode value is 3(agree) for POP and free hand designs while 2(disagree) for stickers.
- **Cardiac ward:** The mode value is 3(agree) for POP and free hand designs while 2(disagree) for stickers.

Remark:

Stickers are only recommended for the Pediatric wards.

Interior Designing for Floor:

- **According to Psychologist:** Plants, utility furniture
- **According to Hospitality:** Plants, utility furniture
- **According to hospital administrators:** Plants, utility furniture
- **According to Architectures:** Plants, utility furniture
- **According to Astrologist:** Plants, utility furniture

- **According to Clinicians:** Plants, utility furniture
- **According to Nursing:** Plants, utility furniture

Modal Value:

- The mode value is 3(agree) for plants and utility furniture in Gynecology and cardiac wards while 2(disagree) for the plants only in pediatric ward.

Do's:

- Use comfortable furniture
- Artificial and natural both plants can be kept
- Change Color of chairs every year

Don'ts:

- Not to used sharp or pointed furniture
- Not to used wooden furniture
- Furniture must not be of faded Color

Remark:

Plants are not recommended for the Pediatric wards but no evidence was found in the literature review to support this statement. The sharp and pointed furniture and as well plants are strictly prohibited so that they not get hurt.

Interior Designing for Direction of bed:

- **According to Psychologist:** Head of the patient will be in east, west, south directions
- **According to Hospitality:** Head of the patient will be in east, west, south, north directions
- **According to hospital administrators:** Head of the patient will be in east, west, south, north directions
- **According to Architectures:** Head of the patient will be in east, west, south, north directions
- **According to Astrologist:** South
- **According to Clinicians:** Head of the patient will be in east, west, south, north directions
- **According to Nursing:** Head of the patient will be in east, west, south directions

Modal Value:

- The mode value is 3(agree) for all the directions for all the three wards.

Do's:

- Use proper ventilation
- There must be three feet distance between two beds
- Beds must be two feet away from the walls

Don'ts:

- Beds must not be kept near the washrooms

Remark:

According to the panelist the patients head must not be in north direction because of the magnetic pulling of the earth while head must in south direction by the Vastu Shastrat for more refer annexure 7.

RELATED MUSIC

- **According to Psychologist:** Instrumental, without lyrics, rhymes, Bhajans
- **According to Hospitality:** Instrumental, without lyrics
- **According to hospital administrators:** Instrumental, without lyrics, rhymes, Bhajans
- **According to Architectures:** Instrumental, without lyrics, rhymes, Bhajans

- **According to Astrologist:** Instrumental, without lyrics, rhymes, Bhajans
- **According to Clinicians:** Instrumental, without lyrics
- **According to Nursing:** Instrumental, without lyrics

Modal Value:

- The mode value is 3 (agree) for the instrumental, Bhajans and without lyrics in all the wards while there is 2 (disagree) for the music which has lyrics in wards except pediatric wards.

Remark:

Rhymes only recommended for the pediatric ward. Even several studies have shown across a variety of patient groups that pleasant music, especially when controllable, often can reduce anxiety or stress and helps some patients cope with pain (e.g., Standley, 1986; Menegazzi et al., 1991).

DISCUSSION

The purpose of this study was to explore the effect that Color consideration and interior designing of the wards has on a patient's recovery while occupying a hospital room. A review of literature showed that there are many widely held beliefs about how Color effects healing, but there are no scientific studies that have been conducted in a hospital setting.

- **Cardiac Ward:**

It is being seen that panelist has recommended many Colors to choose for walls as well as ceiling; mostly the Colors are blue, white, orange, yellow and green. But evidence shows that the physical environment can affect emotional states. Introducing the Colors of red and blue to an environment has been attributed to feelings of anxiousness or depression (Birren, 1961). For interior designing our panelist from the nursing has not recommended any types of frames, posters, paintings because it stimulates. Even bed sheets must not be used of white Color.

- **Pediatric Ward:**

Pediatric healthcare facilities are distinctive for their age adaptive design, detailing that engages a child's imagination and a child scaled environment. These elements promote healing, comfort and family-centered care for the young patient while accommodating state-of-the-art, critical care technology. Mostly bright Colors are recommended by the panelist for the pediatric because children get attracted from bright and attractive things like cartoons, pictures, posters. Otherwise even music is good for the children. The sharp and pointed furniture and as well plants are strictly prohibited so that they not get hurt.

- **Gynecology Ward:**

In Gynecology ward most common Color like pink, white and blue are highly recommended. Pictures, posters of babies, console types of images and sayings can be used to decorate the walls. Soothing types of music like instrumental or without lyrics can be played for the relaxation of mind and body. Plants can be kept for giving the natural look in the ward.

Recommendations**Color Consideration and Interior Designing:**

Color design for wards covers all materials and surfaces. Furniture, Color and lighting can do much to alleviate stress and enhance those areas. Good design can provide a visually calming environment. Comfortable seating with flexible configurations of small group arrangements could provide a friendly, welcoming atmosphere. Daylight and a view out, particularly of planting, make a ward area much more pleasant and should be provided wherever possible.

- In pediatric environments, soothing yet interesting Colors communicate a safe, warm and secure place, while brightening dispositions and acting as stress relievers for both little ones and those who care for them. Use more bright and soothing Colors as they get attracted and feel homely.
- A good mix of hues both warm and cool is a reasonable starting point for a scheme. Use mat surfaces wherever possible to avoid reflections, which can be troublesome, particularly to patients lying in bed.
- Pediatric ward must carefully design because it is for the children. Decoration of the ward must not be such by which children get hurt. Use pictures, posters, flower vas cartoons and toys to make the ward more attractive
- In pediatric wards, efforts to make the place feel appealing and Colorful are appreciated by patients, families, staff and visitors.

Cardiac ward:

- In Cardiac ward use more calming Colors that promote rest in critical care units. Blues, greens and violet are appropriate, because they have healing and calming influences and are stress reducing Colors. Reds, orange and yellow Colors should be avoided, because they induce excitement, increase blood pressure and can cause fatigue (Starkweather et al, 2005). Many studies have concluded that cool Colors have a tendency to calm, whereas warm Colors excite.
- The healthcare environment is still to some extent dominated by floral textile designs. Whilst achieving a homely feel for some patients, the preferences of teenagers, children or men still need exploring judging from comments received. Excellent examples of textile designs which work well with the rest of a Color scheme in wards and day rooms have been found from manufacturers. This approach helps to create a feeling of coordinated fabrics and décor that adds an air of modernity, quality and good design to the immediate environment seen to be missing from some hospital wards.
- Color ordination can tackle this gap easily and have a marked effect on the ambience of an environment. An interesting and imaginative example of local innovation in curtain design for a particular place is the curtain for a bedside found in a “home from home” birth unit. The sheer panel at the top of the curtain allows natural light to filter through to the patient whilst maintaining a certain level of privacy.

Gynecology ward:

- In Gynecology ward use more purple, orange, pink, blue, white Color so females feel better by the reflection of those soothing effect. The Color pink shares the stimulating properties of red and also inspires increased motivation and confidence. Orange is also a stimulating Color that increases social behavior and stimulates both appetite and activity level. White represents purity, innocence, and goodness. White makes a room seem brighter and more spacious, but too much white can have a sterile, cold effect. Pink, which is really a light shade of red, can be soothing even though red is a stimulating Color, and sky or baby blue is more soothing than navy blue.

Music:

- Mostly children like music of their choice and when they are engaged in playing or watching TV, they don't prefer listening to music. So, rhymes will be best for them if needed.
- For Gynecology and Cardiac wards I would like to suggest givingi-pod to each patient and in that all types of music so that whatever types of music patient want to listen they can.

Directions:

- Beds can be kept which suits best. At least patient can view outside by lying on their bed. Any direction can be followed but if hospital is following Vastu Shastra then follow it completely till the end.
- The position of windows can cause a great deal of glare on a polished floor, which can cause problems for the elderly and visually impaired people. High level windows give good penetration of daylight to the rear of the ward, but their reflection in a polished floor can be disorientating.

Color for Hospitals:

- Hospital Color must be change from white to some calm and cool Color like towards light Color. The Color which can be taken into consideration are blue, orange, white, green, peach Color.

Color design strategy:

- Most building surfaces should be light Colored to provide reflected light, which will help soften the light pattern. Ward ceilings are not always ideal when painted white. While white reflects the most light, a slight tint can reduce glare and promote comfortable vision. Special care needs to be taken with patients who are supine and can only see the ceiling. In fact, patients who are prone for long periods will appreciate a tinted ceiling related perhaps to wall Color with some subtle pattern or texture. The pattern must be subtle, otherwise it could cause hallucinations. Walls would probably be best treated with a Color which has 50–60% reflectance value and could be related to the ceiling tint. Walls away from the window may have go up to 70% light reflectance to compensate for less daylight.
- Window walls may contrast strongly with the bright window with the daylight streaming in. These walls should ideally be light and if the windows are very small the wall should be illuminated in some way to counteract the darkness of the surround. Floors should be light-Colored but a contrast difference in light reflectance value of at least 15–20% between walls and floors is desirable for people with low vision.

Bed linen:

- The Color, quality and appearance of hospital bed linen with printed numbers or hospital names is often said to be fairly depressing for patients. Upgrading the sheets on beds in some healthcare buildings would improve patient morale considerably. Patients are not the only ones affected by the poor textiles used; staff would also appreciate better quality sheets so that they could provide attractive and pleasing environments for their patients. Both staff and patients would like modern equivalents such as fitted sheets and duvets to ease the task of bed-making.
- It would also present a more modern feel to the ward, in keeping with current trends. Apart from white, the Colors peach, green and blue are currently in use (depending on the type of ward) Laundering maintenance is cited as one of the main reasons that more interesting Colors are not widely used. Some managers say that mixed Colored textiles are uneconomical for this reason. This can leave some patients feeling very negative about their immediate environment.
- However, certain textile laundering services have commented that they can cope with mixed Colored batches and only dark Colors would create problems. Pastel Colors related to zones of the hospital could be used to assist with a Color scheme. Cream is a functional but clean Color which may not show much staining or soiling.

Curtains:

- Curtains are a staple material in hospitals and found in most parts of the building. They soften the environment visually and acoustically and in many cases form the divisions of interior spaces. In wards, curtains act as a wall or boundary between patients, providing a certain level of privacy. Care

should be taken to ensure that patients, staff and visitors can appreciate the textiles. When lined, the curtains often have their lined side facing the patient. This has proven unpopular and consideration should be given to the use of fabrics which are reversible, woven or have some degree of translucency to allow light to filter through yet still retain some privacy. The designs of most woven fabrics have the definite advantage of looking attractive from both sides.

- Another important function of Color is to flatter the appearance of the patient. Warm, cool or neutral Colors can be used near the patient's bed and Color used should be chosen according to the type of ward. Short stay wards need to be friendly, cheerful and upbeat and conducive to recovery. For long-stay wards, cool Colors are recommended as they generally figure highly in people's preferences and are restful to the eye. These Colors would prevent too great a contrast between mental alertness and physical incapacity. Patients who are unable to move and may be surrounded by a high level of medical technology have a very restricted view; therefore, this area of the ward requires the utmost care to provide the right ambience with enough variety to maintain visual interest.
- Finally, in elder care, the use of Color is especially important when considering the impact of age on vision acuity. In these kinds of environments, the use of light, warm Colors is recommended as well as yellow, orange and red in poorly lit conditions to provide points of focus. No matter what kind of clinical environment you're designing or renovating, consider Color and the people who inhabit that clinical space.

Conclusion:

The research of color consideration and interior designing in healthcare environments is an important endeavor. Color design for wards covers all materials and surfaces. Furniture, Color and lighting can do much to alleviate stress and enhance those areas. Good design can provide a visually calming environment. Comfortable seating with flexible configurations of small group arrangements could provide a friendly, welcoming atmosphere. Daylight and a view out, particularly of planting, make a ward area much more pleasant and should be provided wherever possible. It would also present a more modern feel to the ward, in keeping with current trends. Apart from white, the Colors peach, green, blue, orange, pink are can be use depending upon the type of wards.

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