



## APPLICATION OF COLOR TO THE INTERIOR INPATIENT ROOM IN HOSPITAL (ANALYSIS OF COMFORT IN THE HEALING PROCESS)

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### ABSTRACT

The success of the patient's healing process is a contribution between physiological and psychological conditions. By support a good psychological condition patients, one of them is to provide a comfortable atmosphere interior the inpatient room, applying the right color, expected to reduce stress factors in patients. This study aimed to determine right color inpatients in hospitals. Using descriptive method to review literature, summarizing research findings and selection of colors that appropriate with the interior inpatient room. The results determined colors based on the size of room and height the ceiling. For inpatient rooms that are not too spacious and have a limited ceiling, can use a quiet color, without leaving aside accents so that the room was more lively rather than monotonous include ample room use warm colors without compromising the possibility of being combined with soft and natural colors to give a more comfortable impression.

**Keywords:** Healing patients, color psychology, calm colors, fresh colors, warm colors.

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### Introduction

Many laypeople are of the opinion that the healing process of illness in hospitalized patients depends only on medical treatment [1]. Several factors that influence the treatment process of inpatients in hospitals include environmental factors 40%, medical factors 10%, genetic factors 20%, and other factors 30% [2].

Hospitals are vital health facilities in each region. As a means of health services for patients in healing diseases [3]. The choice of color in a building has a strong influence on the feelings and emotions of its users [4], [5]. Supporting comfort in the interior of an inpatient is one of the applications of the right colors so that it is expected to reduce the stress of inpatients in undergoing the healing process [6], [7].

Psychological every individual can be influenced by

emotionally triggered by the surrounding environment [8]. External factors that can affect human psychological conditions through interaction between individuals and through visuals [7].

The success of the patient's healing process is the complexity that occurs between physiological and psychological conditions (mental thoughts) [4], [9]–[11]. Both of these conditions contribute to the patient's healing process. To support a good psychological condition for patients, one of them is to provide a comfortable atmosphere in the interior of the inpatient room, by applying the right colors [10]. With the application of the right color is expected to reduce stress factors in patients, especially in patients who undergo the healing process in the hospital [7], [12]–[15].

For this reason, this study aims to find out the right colors to

be applied in inpatients in hospitals.

### Methods

The method used is the descriptive method, namely by conducting a literature review, by summarizing all the research findings concerning the selection of colors that are appropriate for the interior of the inpatient hospital.

### Result

#### Relationship Between Humans and The Environment

According to Altaman (1975) in [16]–[19], humans and their environment are basically a unity that cannot be separated because the two interact with each other. To make it easier to interact between humans and their environment, a comfortable environment should be created. Manuaba (1977) in [20], [21] states comfort is an element of a person's feelings due to the minimum disturbance in physical and psychological sensations. For this reason, in interactions between inpatients and their environment that feels strange, one must consider how to create comfortable environmental conditions, one of which is applying the right colors to the inpatient room. Color in interior science is an aspect that is closely related to visual and can affect psychology in inpatients [22], [23].

**Psychological Perception in Interior Design** Perception is the recognition and evaluation by the brain as a result of sensations from sensing carried out by each receptor or sensory nerve cells that humans have, namely the sense of sight (visual), hearing (aural), smell (olfactory), touch (tactile), feelings by body temperature to heat (thermal) (Figure 1)

#### Patient Stress Levels

Symptoms of stress on a person are often not realized because the initial journey of the stress stage arises slowly, and only felt when the stages of symptoms are advanced and interfere with the functioning of daily life. Here are the stages of stress stated by Amberg in [24]:

1. Stress stage 1. This stage is the lightest level of stress and usually makes a person more excited, but unknowingly his energy reserves are running low.
2. Stress stage 2. In this stage, the impact of stress that was initially pleasant begins to disappear and arise complaints due to insufficient energy reserves throughout the day.
3. Stress stage 3. At this stage complaints of fatigue appear increasingly accompanied by symptoms of tense muscles, feeling of tension increases, and sleep disturbances begin.
4. Stress stage 4. This stage has shown a worse condition, characterized by starting to appear difficult to concentrate until feelings of fear that can not be explained.

#### Psychology of Color in Interior Design

Color is an important aesthetic because through color we can clearly distinguish the beauty of an object. Color can be defined subjectively/ psychologically which is a direct understanding by our sense of sight experience and objectively / physically as the nature of the light emitted [23], [25]–[28].

According to Skinner (2001) in [27], a color is a form of light or radiation of electromagnetic waves, which are produced from white sunlight. The human eye can see the color after sunlight passes through a prism that refracts and separates the light into 7 (seven) different frequencies of light waves, namely red, orange, yellow, green, indigo, violet. So one can see color thanks to the light that enters the eye, so humans cannot see color in a dark room without light.

From the psychological side, color has a strong influence on moods and human emotions, making the atmosphere hot or cold, provocative or sympathetic, exciting or soothing. Color is a sensation, produced by the brain from light entering through the eye. Physically sensations can be formed from existing colors. For example, spaces that are colored white or other soft colors can give the impression that space is larger than the actual dimensions. The opposite will happen if the room uses dark colors. To get a warm sensation, rooms that are given cool colors require lower temperature settings (for example with air conditioning) compared to rooms that are given warm colors [23].

Judging from its effects on psychiatric and distinctive properties, colors are divided into 2 categories, namely the hot color group and the cold color group. In between the two are called intermediate colors (see Figure 2). In the psychology color scheme taken from the Oswald color circle system, it can be clearly seen that the hot color group peaks in orange (J), and the cold color peaks in greenish-blue (BH). The colors that are close to orange or red are classified as hot or warm colors and the colors that are adjacent to the turquoise are cold or cool [25].

According to Pile (1995) and Birren (1961) in [23], the psychological effects of hot colors, such as red, orange, and yellow have a psychological effect on the heat, exhilaration, excitement, and stimulation. Yellow and its derivatives have a warm and pleasant impression because the yellow color such as sunlight that just rises so that gives the impression of enthusiasm in the morning [26]. Frenchman (2012) in [27] said the color blue and its derivatives are abundant colors on earth symbolizing natural connotations so that the impression of peace, calm, fresh, purity and positive feelings. The blue color is very suitable combined with a variety of colors.

#### Discussion of Color Psychology in Interior Design of Inpatient Rooms at Hospitals

The warm and friendly impression can be applied to the interior of patient inpatients. Some alternative colors can also be used such as derivatives of green, brown, and blue, which can create a comfortable, pleasant, not boring, and uplifting space [29].

The light green and white colors dominate the interior color of inpatient rooms at RSIA Hermina (Figure 3, 4, 5, 6 and 7). Basically white can be used in all rooms and can be an attractive background for other colors. While green gives the effect of feeling accepted and stability. With this green color, it is hoped that patients can feel calm, able to rest so that they can recover quickly from their illness. On the walls are also used attractive wallpaper, so it does not cause a monotonous impression and result in patients not getting

bored quickly. The colors used at RSIA Hermina are appropriate based on the theory of color psychology by applying calm and soft colors [26].

Based on the literature the blue color was chosen because it can soothe the pulse [25], stabilize pressure, blood, and breath, exert an effect of trust and reduce emotions. The results of the questionnaire regarding this first scheme showed that in the dominant inpatient room in blue many respondents felt tired and some respondents felt tense and panicked. This is not good for an inpatient ward because patients who use it will use the inpatient room for a sufficiently long period of time. Although it is not suitable for inpatient rooms, blue can be used in short-term rooms such as waiting rooms or corridors because the level of stress caused is quite low [24], [30].

The second scheme, the choice of yellow in the room because the color gives the impression of cheerful, and uplifting. Through questionnaire results it can be seen that the inpatient rooms dominated by yellow have a high nervous impact, around 16 respondents answered that way. Overall the color yellow has a fairly high percentage of stress impact. Inpatient rooms dominated by yellow color are not suitable because they cause a high level of stress on the user [24], [31].

The third scheme, the application of green in the third inpatient room scheme was chosen because it gives the impression of calm and cool, natural impression and can reduce stress. Green is the most appropriate color to be applied to inpatient rooms, because of its low impact on patient stress levels [24].

To achieve a comfortable psychological effect for healing patients, especially in patients, it is necessary to apply the right color in the design interior design of inpatient rooms. The steps that need to be known is that we need to know the extent of the inpatient room that we are going to design, and the ceiling height. If the inpatient room is rather narrow in size then to create a broad impression should apply young colors on the walls, floors, and ceilings (Figure 8) [32].

Conversely, if inpatient rooms are larger in size, then to create the impression of smaller spaces warm colors should be applied to the walls and ceiling (Figure 9).

Apply color to the overall interior design of the inpatient room according to the concept taken. While the concepts taken are adjusted to the amount of space and ceiling height. For example, if the inpatient room is not too large with a ceiling height that is not too high, we can take the concept of calm (*calm*) or a fresh concept. In the calm concept elegant soft colors (pastel colors) such as cream, light blue, pale blue, sea blue, light blue, light green, leaf green, faded green, combined with white, do not rule out apply warm colors like red, orange on certain parts with a small scope as accentuation. While fresh concepts can be applied to young colors that take inspiration from nature such as light orange, white (neutral color), apple green, leaf green, lime green, lemon yellow, but also do not rule out the possibility of applying warm colors as accents. If the inpatient room has a large enough room and ceiling dimensions are high enough to take the concept of warm, in this concept can be applied colors of blood red, maroon and dark orange as

accentuation, orange leading to brown, light yellow, brown dark to light brown, metallic gold, terracotta, but not closed also to mix with colors that are classified as white, soft and natural colors. Usually, inpatient rooms that have a large amount of space are included in room VIP [30].

### Conclusion

Apply color to the overall interior design of the inpatient room according to the concept taken. While the concepts taken are adjusted to the amount of space. If the inpatient room is not too large and the ceiling height is low then you can use the concept of calm (*calm*) or the concept of fresh (*fresh*). In the calm concept (*calm*) elegant soft colors (pastel colors) can be applied, such as cream, light blue, pale blue, sea blue, light green, light green, leaf green, faded green, combined with white. While the fresh concept can be applied to young colors that take inspiration from nature such as light orange, white (neutral color), apple green, leaf green, lime green, lemon yellow.

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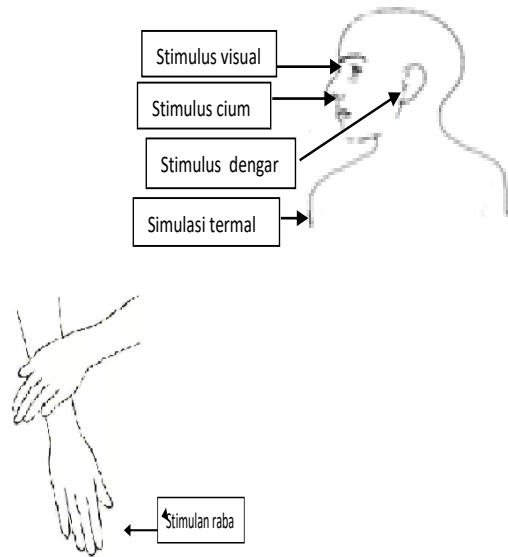


Figure 1. Stimulation of the five senses (3)

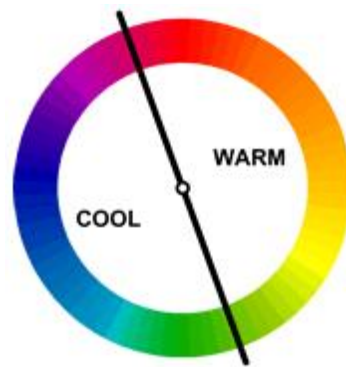


Figure 2. *Color wheel* warm and cold colors (5)



Figure 3. The color application that is applied to the interior of inpatients (7).



Figure 4. Inpatient rooms at RSIA Hermina (1)



Figure 5. Inpatient RSIA in Surabaya (4)



Figure 6. Inpatient hospital RSIA in Surabaya (8)



Figure 7. RSIA inpatient rooms in Surabaya (4)



Figure 8. Application of color for narrow spaces and large spaces (3)

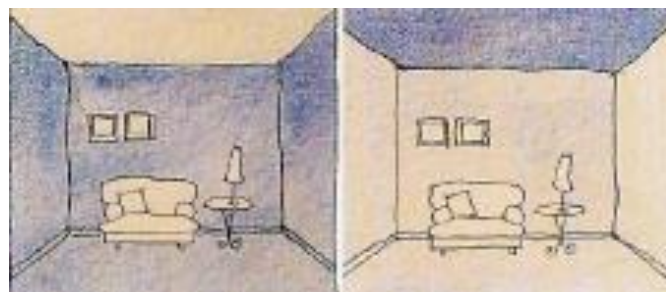


Figure 9. Application of color at low and high ceilings (3)