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Lighting and Color Preferences in Hajj Dormitory Bedrooms: Impact on Visitors' Subjective Well-Being

Putri Ahmadina[1*], Mahendra Wardhana[1]

[1] Departemen Desain Interior, Institut Teknologi Sepuluh Nopember, Surabaya, Indonesia

Penulis Korespondensi
[*]4hm4dinaputri@gmail.com

ABSTRACT

The design of interior spaces significantly influences the subjective well-being of occupants, shaping their emotional states, comfort, and overall experience. Among the key environmental factors, lighting and interior color play a crucial role in creating a harmonious atmosphere, affecting mood, relaxation, and functional efficiency. However, Hajj dormitories, which serve as temporary accommodations for pilgrims and visitors, often suffer from suboptimal lighting and color schemes that may not fully support users' well-being. This study investigates visitor preferences for lighting and color in Hajj dormitory bedrooms and their impact on subjective well-being. Through a systematic analysis and observations, it identifies how lighting conditions and color choices influence psychological responses, either enhancing tranquility or creating discomfort. Findings indicate that poor lighting configurations, such as dim illumination and lack of adjustability, contribute to decreased comfort and usability. Similarly, the selection of overly vibrant or dull color schemes negatively affects emotional balance, reducing the overall quality of the environment. To improve well-being in dormitory spaces, this study emphasizes the need for adaptive lighting solutions that cater to different user activities and color palettes that foster relaxation and positivity. By integrating the Positive Design Framework, dormitories can transition from purely functional accommodations to supportive environments that enhance both physical and psychological comfort. The study provides practical design recommendations that can be applied to Hajj dormitories and other communal accommodations, ensuring that interior spaces contribute to a more comfortable, emotionally supportive, and enriching experience for all users.
Keywords: *Subjective Well-being; lighting; interior color*

INTRODUCTION

The Surabaya Hajj Dormitory serves as a crucial facility under the Ministry of Religious Affairs, originally designed to accommodate pilgrims before their departure for Hajj. Over time, its function has expanded to serve as temporary accommodation for the general public, hosting various activities such as religious gatherings, educational programs, and social events. Despite its significant role, many Hajj dormitories, including the one in Surabaya, face challenges in infrastructure quality, particularly regarding lighting and interior color schemes.

Lighting plays a fundamental role in shaping spatial experiences, influencing not only visibility but also the psychological and emotional well-being of occupants. Similarly, interior color schemes contribute to the ambiance of a space, affecting mood, relaxation, and overall comfort. The combination of these elements determines how welcoming and functional a space feels. However, previous observations indicate that the lighting in the Surabaya Hajj Dormitory bedrooms is often suboptimal, with dim illumination and color choices that may not fully support visitors' well-being.

While research has extensively explored the effects of lighting and color on well-being in residential and commercial environments, limited studies specifically examine their impact in Hajj dormitories. Given the unique function of these spaces—accommodating pilgrims and visitors for extended stays in a communal setting—it is essential to investigate how lighting and color preferences affect their overall comfort and well-being. Many visitors have reported dissatisfaction with the current lighting intensity and color schemes in dormitory bedrooms, suggesting a need for evidence-based design improvements.

Previous studies have emphasized the importance of lighting and color in interior design. Regarding lighting, research by Naglaa Sami (2022) suggests that appropriate lighting conditions, particularly natural and well-balanced artificial lighting, can enhance relaxation and cognitive performance. Annisa and Lestari (2021) found that appropriate lighting types and color temperatures can shape spatial ambiance and influence visitors' impressions, with warm white lighting creating a sense of warmth, relaxation, and cheerfulness. Similarly, Santoso and Wibawa (2021) highlighted that interior color selection significantly affects spatial perception and psychological comfort, ultimately influencing visitors' overall experience.

However, research specifically examining lighting and color preferences in Hajj dormitory environments remains limited, necessitating further exploration to better understand visitors' unique needs in this context. This study evaluate the correlation between lighting and color preferences and visitors' subjective well-being and Identify preferred color schemes in Hajj dormitory bedrooms and their psychological effects on visitors. This study also provide design recommendations that enhance comfort, relaxation, and emotional well-being for dormitory visitors.

RELATED STUDY

Previous research on interior lighting and color serves as a crucial foundation and a source of inspiration for the current study. These earlier works provide valuable theoretical frameworks, methodological insights, and practical perspectives while highlighting gaps and opportunities for further exploration. By leveraging this existing knowledge, the present research aims to deepen our understanding of how lighting and color preferences shape subjective well-being and enrich overall interior experiences.

It has been consistently demonstrated that both lighting and interior color significantly impact mental states and individual well-being. However, the findings across various studies have been diverse and occasionally contradictory due to differences in focus areas, scientific disciplines, user demographics, and research methodologies.

For instance, Naglaa Sami (2022) emphasizes that appropriate lighting and bright color temperatures can profoundly influence the functional effectiveness of interior spaces, positively affecting mood and promoting optimal relaxation in residential environments. In another study, Prabu Wardono (2012) utilized digital simulations to uncover a preference among some visitors for monochromatic color schemes and dim lighting, yielding statistically significant differences in perceptions of space and ambiance.

These contrasting findings highlight the complexity of the relationship between lighting, color, and subjective well-being. They also stress the importance of conducting further research to bridge these knowledge gaps and explore how user preferences for lighting and color contribute to mental well-being and functionality in specific interior contexts, such as Hajj dormitories. By addressing these aspects, the study seeks to provide actionable insights for designing spaces that are not only aesthetically pleasing but also conducive to enhancing emotional and psychological comfort.

A. Subjective Well-being

Subjective well-being encompasses an individual's assessment of their overall sense of well-being, influenced by factors such as positive emotions, engaging activities, and fulfilling relationships. It promotes personal growth when these elements converge harmoniously, creating a foundation for thriving and self-improvement. To cultivate subjective well-being, the interplay between individuals and their environment must be optimized, enabling a supportive and growth-oriented setting.

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The Positive Design Framework offers a valuable lens through which interior environments can be designed to enhance user well-being. This framework, introduced by Desmet & Pohlmeyer (2013), highlights three core elements critical to fostering subjective well-being:

- Design for Pleasure: Prioritizes enjoyable experiences, aiming to amplify moments of delight while reducing sources of discomfort.
- Design for Personal Significance: Encourages spaces that support users in achieving their personal goals and ambitions.
- Design for Virtue: Inspires individuals to evolve into their best selves, fostering moral and personal development.

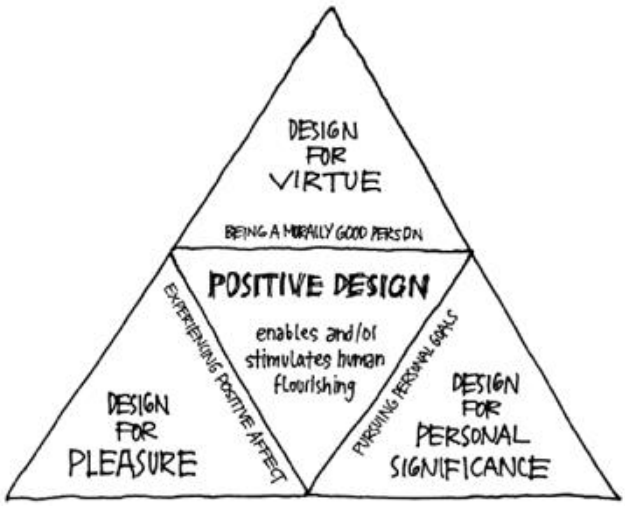

Image 1. Positive Design Framework
Source: Desmet & Pohlmeyer, 2013

This framework goes beyond functional and aesthetic considerations, advocating for designs that contribute to users' emotional and psychological well-being. As noted by Ann Petermans (2014), the Positive Design Framework provides a strategic and actionable foundation for interior architects and designers. It equips them with tools to create spaces that elicit positive emotions, facilitate personal growth, and nurture meaningful experiences, aligning design practices with the overarching aim of enhancing subjective well-being.

Incorporating the Positive Design Framework into interior design projects ensures that the resulting spaces are not only visually appealing and functional but also deeply supportive of the users' emotional and psychological health, ultimately elevating their quality of life.

B. Design for Pleasure

"Design for Pleasure" is a central concept in design theory that focuses on creating products, environments, and experiences that elicit joy and positive emotional responses from users. This approach goes beyond functionality, delving into the emotional dimensions of user experience to fulfill deeper emotional needs and desires. The goal is to enhance satisfaction and well-being by integrating elements that resonate emotionally, offering sensory appeal, and fostering meaningful interactions.

As Jordan (2000) articulates, human pleasure during object interaction can be categorized into four types:

1. Physio-Pleasure: This arises from physical sensations such as sight, sound, smell, taste, and touch. The initial sensory engagement, particularly through visual and tactile means, forms a crucial foundation of pleasure.

2. Socio-Pleasure: Derived from interactions with other users, this type of pleasure underscores the social role of products. For instance, sharing text messages on mobile devices illustrates how products facilitate meaningful interpersonal connections.
3. Psycho-Pleasure: Reflects the mental satisfaction gained during product use, such as the enjoyment of mastering a product's functionality or navigating its logical structure through menus, icons, and commands.
4. Ideo-Pleasure: Rooted in the user's reflection on the value and significance of a product, this type of pleasure emphasizes how objects contribute to the user's identity, aspirations, or quality of life.

These dimensions collectively demonstrate the nuanced ways in which users engage with and derive satisfaction from designs. By addressing these facets, "Design for Pleasure" aims to create holistic user experiences that enrich life through emotional connection, sensory delight, and meaningful engagement. This framework underscores the transformative potential of thoughtful design, illustrating how attention to emotional and sensory details can significantly enhance the overall user experience, ultimately fostering a greater sense of well-being and satisfaction.

C. The impact of Novelty and Familiarity on Short-Term Emotional Engagement with Objects

Pleasurable experiences with objects arise from a synergy of aesthetic appeal and sensory engagement, enabling these objects to form meaningful emotional bonds with users. Ownership, usage, and interaction with objects often play a crucial role in nurturing these connections. However, psychological studies, including insights from Don Norman (2004), reveal that such bonds can diminish over time as familiarity grows.

Users tend to pay less attention to objects that become overly familiar, perceiving them as less stimulating or even mundane. This phenomenon is attributed to the brain's natural tendency to adapt to repetitive experiences, reducing the emotional impact and attachment to the object. In contrast, new and unfamiliar stimuli are more likely to capture attention and evoke stronger emotional responses, as they are perceived as unpredictable and intriguing.

To counteract this adaptation, products must be designed to sustain user engagement over time. This involves three key elements:

1. Visual Appeal: Objects should initially captivate users through aesthetic and sensory elements that attract and hold attention.
2. Enjoyable Interactions: Emotional connections are strengthened through interactions that are intuitive, engaging, and enjoyable.
3. Emotional Significance: An object must fulfill the deeper emotional value users associate with it, ensuring that ownership and use remain meaningful and satisfying.

The challenge lies in maintaining a balance between novelty and familiarity. Products must offer experiences that evolve or refresh over time to prevent monotony while continuing to resonate with users on an emotional level. By addressing this dynamic, designers can create objects that foster long-term emotional bonds, ensuring that they remain sources of pleasure, engagement, and positive association throughout their lifecycle.

D. Lighting and Its Rols in Subjective Well-being

Lighting is a cornerstone of visual perception within interior spaces, particularly during the day, and plays a critical role in shaping the emotional ambiance of a home. Research indicates that specific qualities of artificial lighting can influence not only how a space is perceived but also the emotional states of its occupants (Bravo et al., 2022).

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Approaching lighting design as a multidisciplinary practice allows for the integration of knowledge from human behavior, psychology, and physiology into the development of lighting solutions. While technological advancements remain pivotal, the emphasis must shift toward user-centered design. By prioritizing the needs and experiences of users, lighting can transcend its functional role to enhance emotional and psychological well-being (Betina Martau, 2010).

The interplay between proper lighting and color temperature is crucial for the success of interior spaces. These elements significantly affect visibility, functionality, and the emotional responses of users. A detailed examination of lighting conditions is necessary to identify optimal configurations that align with user preferences. Such an approach ensures that the interior environment fosters the desired mood, functionality, and comfort, ultimately contributing to the well-being of those who inhabit these spaces (Naglaa SAM, Gamal E, Chuloh Jung).

E. Colors and Its Role in Subjective Well-being

Colors play a powerful role in shaping human mood, emotions, and perceptions, influencing both psychological and physiological responses. From a psychological standpoint, colors significantly impact how individuals feel and react within a space, altering the atmosphere to be warm or cool, provocative or calming, stimulating or soothing. As a sensation generated by the brain when light enters the eyes, color perception is deeply intertwined with the physical characteristics of a space. For instance, using white or pastel tones in a room can create the illusion of greater spatial dimensions, while darker shades tend to make the space feel smaller and more enclosed.

Research underscores the profound effects of color on psychological and emotional well-being. The deliberate use of color in design not only enhances the aesthetic appeal of a space but also contributes to creating a harmonious and pleasurable indoor environment that promotes relaxation and contentment (Yingfeng Kuang, 2017). Furthermore, the mood-altering properties of colors align closely with the activities performed within a space. Warm hues such as reds and oranges energize and inspire activity, whereas cooler tones like blues and greens promote calmness and introspection (Yingfeng Kuang, 2017).

Blue and green, in particular, emerge as effective choices due to their natural associations with serenity and positivity—blue with openness and peace (Kaya & Epps, 2004; Mehta & Zhu, 2009) and green with tranquility and success. These connections highlight the potential of color as a design element to evoke desired emotions and foster subjective well-being. When used thoughtfully, colors can significantly enhance the functional and emotional experience of interior spaces, creating environments that resonate with both purpose and positivity.

METHODS

This study employs a mixed-methods approach combining Systematic Literature Review (SLR) and Observation to explore the impact of lighting and color preferences on subjective well-being in Hajj dormitory bedrooms.

The research employs the Systematic Literature Review (SLR) method, a structured approach to evaluating and synthesizing existing literature. The SLR method systematically identifies, evaluates, and interprets all relevant findings on a specific research topic to address predefined research questions established by earlier researchers and practitioners. This process involves reviewing journals in a systematic manner, adhering to clearly defined steps. The primary objective of the SLR method is to construct sound reasoning based on the formulated research problem and to analyze and synthesize existing knowledge to identify areas for further investigation.

The observational method was applied to assess the current lighting and color conditions

in the bedrooms of the Surabaya Hajj Dormitory. Key elements observed included the type, intensity, and arrangement of lighting fixtures, as well as the color palette used in walls, furniture, and furnishings. The observations were systematically documented during site visits to understand how these environmental factors influence visitors' comfort, emotional responses, and subjective well-being. Observational data were analyzed in conjunction with findings from the literature review to identify gaps and provide practical design recommendations.

By combining these methods, the study integrates theoretical knowledge with real-world insights, ensuring a comprehensive understanding of how lighting and color impact subjective well-being in Hajj dormitory settings.

FINDIGNS AND DISCUSSION

The results of numerous studies underscore the profound influence of color on both psychological and physiological responses in interior spaces. Colors are not merely decorative elements; they possess the ability to evoke emotions, shape moods, and even elicit physical reactions. This transformative power enables environments to exude warmth, coolness, provocation, empathy, stimulation, or tranquility. Such effects stem from the sensory processing of light as it enters the eyes and is interpreted by the brain. For instance, lighter shades like white can make a room appear more spacious, while darker hues have the opposite effect, creating an impression of compactness.

Aleksander et al. (2024) found that inadequate lighting in dormitory rooms can lead to discomfort for residents. Insufficient lighting makes it difficult for occupants to perform activities such as reading and writing, while overly bright lighting can disrupt sleep patterns. Therefore, it is crucial for residents to properly adjust their lighting to support both productivity and overall well-being.

Additionally, Sari (2017) emphasized that lighting not only serves to facilitate human activities but also contributes to the aesthetic quality of a space. The selection of lighting types, color temperature, shape, placement, and techniques used can create different atmospheres and spatial characteristics, ultimately affecting the comfort and well-being of occupants.

Moreover, lighting and color temperature are critical in determining the functionality, ambiance, and comfort of a space, particularly in settings designed for diverse activities. The strategic integration of appropriate lighting and color schemes plays a pivotal role in fostering an environment conducive to the well-being of occupants. As suggested by Naglaa SAM, Gamal E., and Chuloh Jung, thoughtful design choices can transform accommodations into spaces that resonate with the needs and preferences of users, enhancing their overall experience.

Research further emphasizes the importance of color in promoting harmony, functionality, and the well-being of those inhabiting a space. Properly chosen color palettes not only elevate aesthetic appeal but also contribute to emotional and psychological health (Kuang, Y., 2017; Kaya, N., & Epps, H. H., 2004; Mehta, R., & Zhu, R., 2009).

As Jordan (2000) posited, human pleasure in interacting with objects often begins with visual attraction, progresses through the enjoyment of interpersonal experiences, and culminates in psychological satisfaction. Even during brief encounters, visitors instinctively react to a room’s lighting and color. This highlights the value of responsive design, which caters to immediate sensory impressions and enhances short-term interactions.

A. Application of Lighting on the Well-being of Hajj Domitory Visitors

Proper lighting in Hajj dormitory bedrooms is essential for ensuring visitors’ comfort and well-being. Insufficient lighting can lead to eye strain and reduced productivity, while overly bright lighting may disrupt natural sleep cycles. Therefore, adjustable lighting, such as dimmers or lights with variable intensity, is recommended to accommodate different needs.

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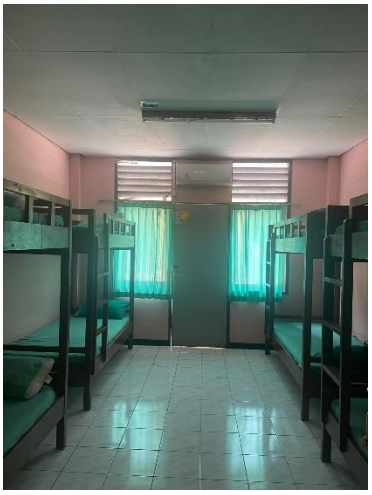

Image 2. Surabaya Hajj Dormitory
Source: Researcher Personal Ducument, 2024

The lighting in this Hajj dormitory bedroom appears insufficient and lacks variation, which may have a significant impact on the comfort and well-being of its occupants. The predominant reliance on a single light source with minimal brightness creates a dim and monotonous atmosphere, which could lead to visual discomfort and reduced functionality, particularly for activities requiring focused illumination. Furthermore, the absence of layered lighting—such as task lighting, ambient lighting, or accent lighting—limits the adaptability of the space to various user needs.

Selecting the appropriate color temperature is crucial. Based on the findings of Annisa and Lestari (2021), the use of warm white lighting can create a familiar and relaxed atmosphere, which is suitable for bedrooms in the Hajj Dormitory. However, it is important to note that for certain activities that require higher levels of lighting, such as reading or writing, brighter additional lighting is required to ensure visual efficiency and comfort. Warm-toned lighting (approximately 2700K-3000K) creates a cozy and relaxing atmosphere, making it ideal for bedrooms. However, for areas designated for reading or activities requiring focus, cooler-toned lighting may be more suitable.

B. Application of Interior Colors on the Well-being of Hajj Domitory Visitors

Choosing the right interior colors can enhance visitors' subjective well-being. Cool tones such as blue and green help to calm the mind and reduce stress, making them well-suited for bedrooms. Aleksandra, et al (2019) emphasized that blue primarily invigorates the feeling of clarity, arrange and calmness. This color is especially valuable for a consider, but it could be a great choice for the room since it fortifies sensation of peace and calm. The tones of blue must be carefully utilized, since the lighter tones have a calming impact, whereas the darker tones may cause a discouraging feeling. Green color has comparable impacts, but it is additionally emphatically related to nature, so its calming impact is more grounded. On the other hand, blue and green can cause negative sentiments so they require caution (Alexandra et al, 2019).

Image 3. Surabaya Hajj Dormitory
Source: Researcher Personal Ducument, 2024

As seen in the example of the bedroom in the Hajj Dormitory in Surabaya, the wall color used is green. However, the green is too vibrant, making the room feel cramped and reducing its overall comfort, causing most of the dormitory residents to prefer engaging in activities outside the room.

Meanwhile, neutral colors like white, beige, or light gray provide a clean and spacious feel, further enhancing occupant comfort. Neutral color are very flexible and adaptable (Alexandra, et al, 2019). This makes them ideal for usage in rooms of varied purposes. However, it is important to avoid overly bright or high-contrast colors in sleeping areas, as they may overstimulate the brain and interfere with relaxation. Incorporating accent colors thoughtfully can add aesthetic appeal without compromising comfort.

C. Design Recommendation for Hajj Dormitory Bedroom

Based on the findings above, the following recommendations can help improve visitors' subjective well-being through lighting and interior color design:

Image 4. Hajj Dormitory Design Recommendation
Source : Researcher Personal Ducument, 2024

1. Use adjustable lighting to cater to different occupant activities and choose warm-toned lighting to create a cozy and calming atmosphere in bedrooms. It is recommended to incorporate brighter, energy-efficient LED fixtures with adjustable intensity to suit different tasks and preferences. Additionally, introducing diverse lighting types, such as bedside lamps or wall sconces, can create a more dynamic and user-friendly environment, contributing positively to the overall subjective well-being of the

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occupants.

2. Apply cool or neutral colors on walls and primary furniture to promote a peaceful and relaxing environment and avoid excessively bright or striking colors in sleeping areas. Introduce accent colors through decorative elements or accessories to enhance aesthetics without compromising comfort.

CONCLUSION

This study reaffirms the crucial role of lighting and interior color in shaping visitors' subjective well-being, particularly within the context of Hajj dormitory bedrooms. Drawing from the findings of this research and the observation data, it is evident that lighting and color schemes significantly influence emotional states, relaxation, and overall satisfaction. Visitors instinctively respond to the spatial environment, even during short stays, and their well-being is directly affected by the quality of lighting and the psychological impact of color selection.

The findings revealed that the current lighting conditions in the Surabaya Hajj Dormitory are often suboptimal, with dim illumination and a lack of adjustability, leading to discomfort among visitors. Additionally, dominant color choices, such as overly vibrant or dull tones, have been reported to reduce the sense of tranquility in the space. These insights align with the journal article's key observations—lighting and color must be strategically optimized to create a more welcoming and supportive environment.

To improve visitor well-being, it is essential to implement evidence-based design interventions, including adjustable lighting solutions that cater to different user needs and color palettes that promote calmness and relaxation. Enhancing lighting intensity, introducing warmer or natural tones, and incorporating neutral or cool-colored walls can foster a more conducive atmosphere for rest and personal reflection.

This research contributes to the broader discourse on design for subjective well-being, reinforcing the Positive Design Framework (Desmet & Pohlmeyer, 2013). By integrating design for pleasure, personal significance, and virtue, interior environments—especially communal accommodations like Hajj dormitories—can be transformed into spaces that not only meet functional requirements but also support the emotional and psychological well-being of their users. Future research can build upon these findings by exploring personalization strategies in dormitory spaces and assessing long-term user satisfaction with improved lighting and color interventions. By aligning interior design strategies with user-centered well-being principles, Hajj dormitories can enhance the pilgrimage experience and create more comfortable, spiritually enriching environments for visitors.

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