Application materials and interior of radiology room at Padang Panjang hospital

Materiales de aplicación e interior de la sala de radiología del hospital de Padang Panjang

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Abstract

The Hospital is a health service infrastructure that provides complete health care. One of the facilities in the Hospital is the Radiology Room. What is meant by radiology is the part of medical science that studies imaging technology in the form of electromagnetic waves and mechanical waves that function to detect diseased internal organs of humans. The radiology room consists of the C.T. scan room, X-ray, MRI, etc. Radiologists play a very important role in the health sector because radiologists can provide assistance related to surgery, cancer, obstetrics, etc. In designing the radiology building, the architect has quite a role, one of which is applying materials that keep the radiology room sterile and applying safe materials for both staff and patients so that they are not exposed to radiation. The application of color is also very influential on the psychology of the patient and the user as a form of effort to make the user more comfortable while in the room and increase the hope of healing for the patient. The application of color can also reflect the image of the room. The material used in the radiology room is different from the room in general because radiation rays must be muffled and pay attention to the creation of sterility in the room. The methodology in this study uses the method of observation and data collection. Padang Panjang City Hospital is a class B hospital in which there are radiology facilities with a modern minimalist interior concept. The radiology room has 30 cm thick brick walls and is lined with 2mm – 4mm thick lead. This is done so that radiation rays can be muffled and patients and users will not be exposed to radiation. This study was conducted to create the application of the right material as an effort to safety and comfort and to apply the role of color in the radiology room to increase the hope of healing for patients. This study applies the concept of a modern minimalist interior, prioritizing the function and effectiveness of the room and furniture.

Keywords: Interior radiology, color psychology, material

Resumen

El Hospital es una infraestructura de servicios de salud que brinda una atención integral en salud. Una de las instalaciones del Hospital es la Sala de Radiología. Lo que se entiende por radiología es la parte de la ciencia médica que estudia la tecnología de imágenes en forma de ondas electromagnéticas y ondas mecánicas que funcionan para detectar órganos internos humanos enfermos. La sala de radiología consta del C.T. sala de exploración, rayos X, resonancia magnética, etc. Los radiólogos juegan un papel muy importante en el sector de la salud porque pueden brindar asistencia relacionada con cirugía, cáncer, obstetricia, etc. En el diseño del edificio de radiología, el arquitecto tiene un papel importante, uno de los cuales es aplicar materiales que mantengan estéril la sala de radiología y aplicar materiales seguros tanto para el personal como para los pacientes para que no se expongan a la radiación. La aplicación de color también influye mucho en la psicología del paciente y del usuario como una forma de esfuerzo para que el usuario se sienta más cómodo mientras está en la habitación y aumentar la esperanza de curación del paciente. La aplicación de color también puede reflejar la imagen de la habitación. El material utilizado en la sala de radiología es diferente al de la sala en general porque los rayos de radiación deben amortiguarse y prestar atención a la creación de esterilidad en la sala. La metodología en este estudio utiliza el método de observación y recolección de datos. El hospital de la ciudad de Padang Panjang es un hospital de clase B en el que hay instalaciones de radiología con un concepto interior moderno y minimalista. La sala de radiología tiene paredes de ladrillo de 30 cm de espesor y está revestida con plomo de 2 mm a 4 mm de espesor. Esto se hace para que los rayos de radiación puedan amortiguarse y los pacientes y usuarios no estén expuestos a la radiación. Este estudio se realizó para crear la aplicación del material correcto como un esfuerzo por la seguridad y la comodidad y para aplicar el papel del color en la sala de radiología para aumentar la esperanza de curación de los pacientes.

Este estudio aplica el concepto de un interior minimalista moderno, priorizando la función y eficacia de la habitación y el mobiliario.

Palabras clave: Radiología interior, psicología del color, material.

Introduction

Architecture is a product and process of planning and design that creates a building object, be it buildings, hospitals, bridges, etc. An architectural object has different functions according to what will be achieved for its needs.

According to the Law of the Republic of Indonesia No. 44 of 2009 in the Christian journal, r. (2020). a teaching hospital in the city of Magelang.[16] Hospital is a health service infrastructure that provides complete health care for individuals. One of the facilities in the Hospital is the Radiology Room. The radiology room is a public facility located in the hospital area. What is meant by radiology is the part of medical science that studies imaging technology in the form of electromagnetic waves and mechanical waves that function to detect diseased internal organs of humans. The radiology room consists of the C.T. scan room, X-ray, MRI, etc.[14] Radiologists play a very important role in the health sector because radiologists can provide assistance related to surgery, cancer, obstetrics, etc. Radiological examinations have their respective functions to detect diseases, including 1. C.T. scan detects bone parts such as severe fractures, common tumors, and shifts in bones and joints. 2. X-rays detect lung diseases such as bronchitis, lung cancer, and others. 3. Ultrasound (ultrasound) detects heart disease. 5. MRI detects abnormalities in the brain, including stroke, tumor, bleeding, and others.[8] When constructing the radiology room, it is important to pay attention to the materials used because the radiology room contains X-rays. The role of color is also very influential in creating comfort for the user and increasing the hope of the patient's recovery.

Experts provide opinions related to interior design in the.[5] Interior Design of Indonesian Music Center in South Jakarta With High Tech Concept, according to Alexander (1983), Interior design is the right physical component of a physical structure. According to designer.[15] Promotional Design of Kampung Next door Puppet Show for Solo City Youth, Design is a problem-solving activity directed at a goal, while according to[7] in the.[17] Interior design is planning the layout and design of the interior space in a building. In interior design, especially in the radiology room, the architect applies several concepts, including the modern minimalist concept. According to[20]. Interior Design of Post Offices in Bandung City The modern minimalist concept will make its users feel more comfortable and safe. Because many people today want instant, the minimalist concept can be interpreted as simplicity from using facilities. This concept emphasizes functional while the modern concept can be interpreted if this concept emphasizes a modern concept that always keeps up with the times.[11] So it can be concluded that the modern minimalist concept is a combination of minimalist and modern concepts to create a more functional, simple, and up-to-date room. According to[23], the role of color in hospital interiors has a healing environment perspective on the patient's healing process. Interior dimensions. Interior design in a hospital is a built environment directly related to patients. Through design elements such as color, an environment or atmosphere can be created to support the healing process.[13]

To improve health facilities for the community, Padang Panjang City Hospital is a class B hospital that is currently planning an integrated diagnostic installation building, which includes radiology room facilities. In the interior planning of the radiology room, applying a modern minimalist concept, the colors used include green and white to psychologically treat the patient and make the room look more sterile.[9]

Judging from the image of the application of materials and the application of color to the interior of this radiology room, the research on the study of the application of materials and colors in the radiology room of the Padang Panjang General Hospital with a modern minimalist concept is an interesting study to do.[4]

Research Methodology

Data Analysis Methods In this study, including:

In this study, using the observation method, what is meant by observation is the observation by coming directly to the location of the object to be studied. What is meant by observation is the observation by coming directly to the location of the object to be studied.[18] Observation method is an investigation conducted to obtain facts from existing phenomena and seek factual information about a group or region's social, economic, and political institutions. Researchers made observations at Padang Panjang Hospital. Observation aims to obtain information and identify problems to justify the current state of affairs and see firsthand the site situation.[12]

Data collection methods, namely looking for literature or information related to the object to be studied. Data collection can be in photos or explanations about the object to be studied. The data obtained is specific data that can be trusted.

Figure 1. Existing site conditions

Result and Discussion

Padang Panjang City Hospital is a class B hospital located on Jl. Tabek Gadang Ex. Changing Padang Panjang. To improve public health facilities and due to the unavailability of radiology room infrastructure facilities, the local government built an Integrated Diagnostic Building, in which radiology room facilities are available.[19]

Figure 2. Master Plan
Source: PT Pandu Persada

The integrated diagnostic building of the Padang Panjang City Hospital. The site is a contoured land so that in its implementation, it must receive treatment.[10] The placement of the building, the first thing is that on the site, there is an existing retaining wall, but it crosses the building area so that the retaining wall is partially dismantled and adds a new retaining wall to the side of the building.[21] The study's findings show that eco-efficiency has been improving steadily over time. While pure technical efficiency is more important than scale efficiency, eco-efficiency is more important than pure technical efficiency(Andiyan & Cardiah, 2021).

Table 1. (Explanation of the name of the building in Figure 2)

Description	Area	Number of Floors	Total Area
A.Medical Check-Up	507.33	1 ½ FL	761.00
B. Outpatient Installation	587.70	1 FL	587.70
C. Medical Rehabilitation	504.35	1 FL	504.35
D. Main Hall/ Outpatient E. Inpatient Installation F. Hospitalization, Nutrition Laundry	3073.95	3 FL	922.1.85
G. Class 3 Hospitalization	898.84	3 FL	2696.53
H. Ambulance Garage	78	1 FL +Basement	186
I. Pharmacy Installation	196.63	1 FL	196.63
J. Office Space	821.09	2 FL	1642.18
K. Morgue	225	1 FL	225
L. Mosque	400	1 FL	400
M.Incenerator	16.97	1 FL	16.97
N. Trash bin	10.40	1 FL	10.40
O. Doctor's Housing	1032.35	1 FL	1032.35
P. Waste Treatment Plant	120	1 FL	120
Q.Reservoir	64	1 FL	64
S. Canteen	91.49	1 FL	91.49
T. Emergency Room	525	3 FL	1350
U.Central Surgical Installation	1000	3 FL	3000
V.Lab	525	3 FL	1575
W.IPSRS	522.16	3 FL	1566.48
X. VIP Hospitalization	898.84	3 FL	2696.53
Y. Training	600	3 FL	1800

Figure 3. Site Plan
Source: PT Pandu Persada

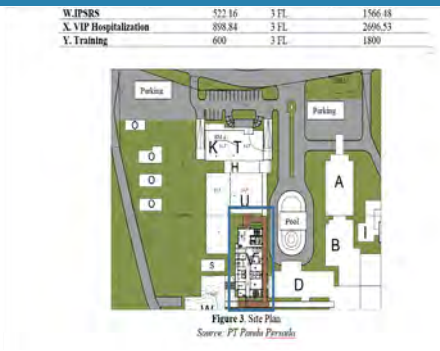


Figure 3. Blow Up site location in the integrated diagnostic building of the Padang Panjang City Hospital. The site is a contoured land so that in its implementation, it must receive treatment.[22] Every project has a deadline so that completion is not late, but every project does not always go according to schedule.[1,2]

Figure 4. Details of Lead Application in X-Ray Room
Source: PT Pandu Persada

Figure 4. Details of Lead Application in X-Ray Room
Source: PT Pandu Persada
Figure 4. For the safety of users and other patients from radiation exposure in the X ray room, a wall with a thickness of: 30 cm is required, covered with lead thickness: 2 - 4 mm and covered with Gypsum partitions. Inside the X ray room there is an operator's room for officers.

Figure 4, For the safety of users and other patients from radiation exposure in the X-ray room, a wall with a thickness of 30 cm is required, covered with lead thickness: 2 - 4 mm and covered with Gypsum partitions. Inside the X-ray room, there is an operator's room for officers.

Figure 5. Illustration of the X-ray room
Source: PT Pandu Persada

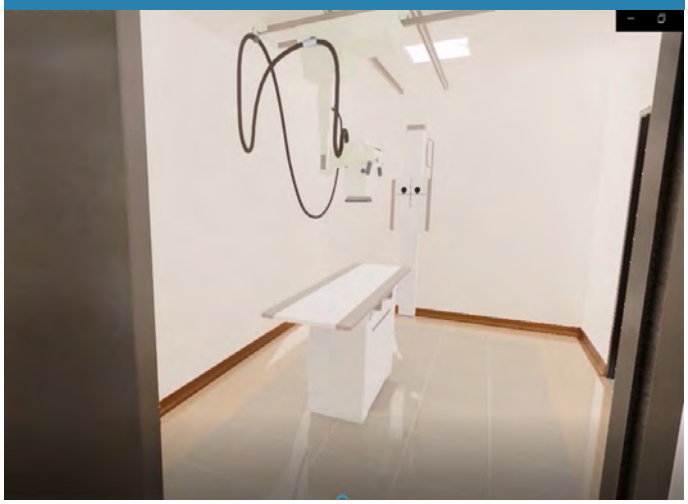


Figure 5 is a patient area in the X-ray room, and in this room, a minimalist concept is used, namely a concept that emphasizes functionality. On the wall finishing, it is coated with anti-bacterial emulation paint and given a hospital plaster which aims to prevent dust buildup or the room from remaining sterile and easy to clean. The pros and cons of the community against the health protocol rules that are applied have caused some regulations to be relaxed a little. To measure and educate public awareness in implementing health protocols, further research is needed.[6]

Figure 6. Faraday's cage
Source: PT Pandu Persada

Figure 7. Details of MRI Room Anti Radiation Protection
Source: PT Pandu Persada

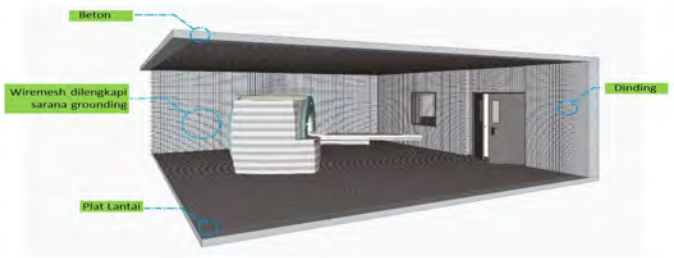


Figure 7 is a Faraday cage, or Faraday shield is an enclosed space made of electrically conducting materials. The chamber is capable of blocking the external static electric field. Faraday cage is usually applied to the MRI room. Various difficulties encountered in architectural and interior planning, as well as design studio lectures, need students' adaptation via the use of virtual reality and digital technology.[3]

Figure 8. Interiors. Registration
Source: PT Pandu Persada

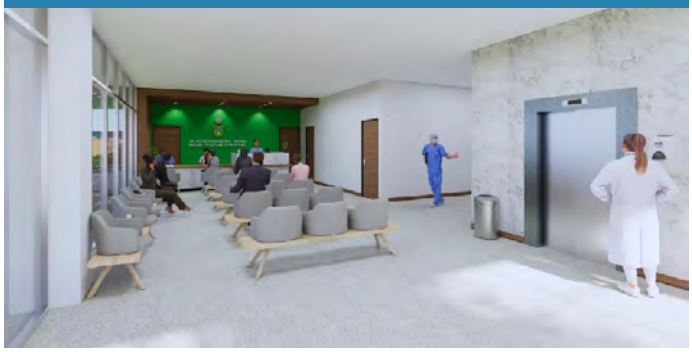
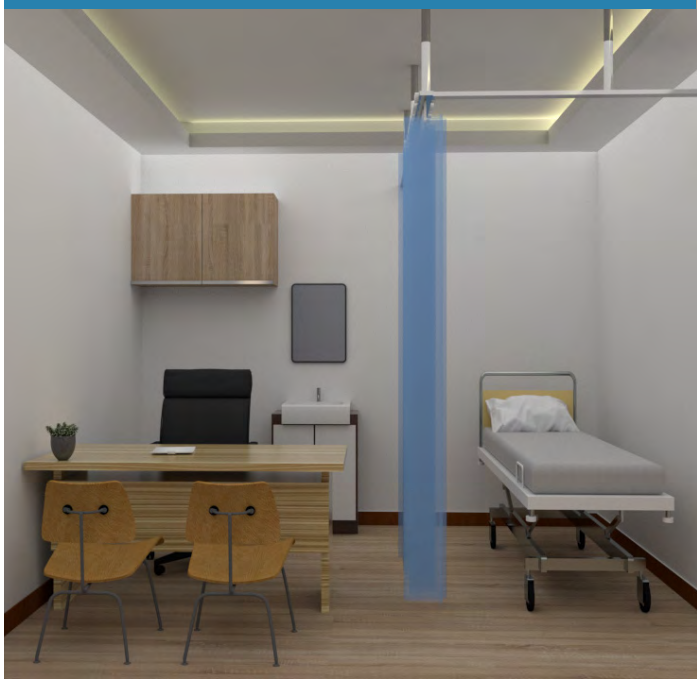


Figure 8, The interior of the registration room uses a modern minimalist concept. It can be seen from the seating area of the waiting area made more modern with attention to functionality and also the application of finishing on the floor and elevator walls.

Figure 9. Interior Klinik
Source: PT Pandu Persada



The clinic's interior uses a modern minimalist concept, with vinyl flooring material to maintain its sterility, walls covered with anti-bacterial acrylic emulation paint + Hospital plinth, and gypsum ceiling.

Conclusion

In the Hospital's interior design, things that must be considered are applying the right materials so that the room remains sterile, paying attention to the comfort of patients and health workers, and applying materials as security for both patients and staff. This interior design uses a modern minimalist concept so that not too many ornaments are applied but rather apply to the functional.

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