



Post Occupancy Evaluation of The COVID – 19 Isolation Room

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ABSTRACT

The Indonesian government has declared the COVID-19 outbreak a national disaster, and so far it has not been declared over. Hospitals in making special isolation rooms for COVID-19 have requirements that must be met, this is to anticipate transmission both between patients and to officers. The purpose of the study was to evaluate the post-occupancy of the Covid-19 isolation room at the As-Suyuthiyah Hospital in Pati. This type of research uses mixed methods research with descriptive quantitative and case studies. Data were obtained from observations of the physical condition of the room, followed by environmental tests (temperature, lighting, noise, humidity, and microbiological quality), as well as questionnaire data filled out by internal and external users with descriptive presentation. The research was carried out in stages from March to November 2021. The results showed that most of the isolation rooms had met the special isolation room standards issued by the government, and most of the internal and external users felt safe and comfortable while in or using the room.

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ABSTRAK

Pemerintah Indonesia telah menetapkan wabah COVID – 19 sebagai bencana nasional, dan hingga saat ini belum dinyatakan berakhir. Rumah Sakit dalam membuat ruang isolasi khusus COVID – 19 terdapat persyaratan yang harus dipenuhi, hal ini untuk mengantisipasi adanya penularan baik antar pasien maupun kepada petugas. Tujuan penelitian adalah untuk melakukan evaluasi pasca huni ruang isolasi covid – 19 di Rumah Sakit As-Suyuthiyah Pati. Jenis penelitian menggunakan penelitian mixed methods dengan kuantitatif deskriptif dan studi kasus. Data diperoleh dari observasi kondisi fisik ruangan, dilanjutkan uji lingkungan (suhu, pencahayaan, kebisingan, kelembaban, dan kualitas mikrobiologis), serta data kuesioner yang diisi oleh pengguna internal dan eksternal dengan penyajian secara deskriptif. Penelitian dilakukan bertahap selama Maret sampai November 2021. Hasil penelitian didapatkan yakni ruang isolasi tersebut sebagian besar sudah memenuhi standar ruang isolasi khusus yang dikeluarkan oleh pemerintah, dan sebagian besar pengguna internal maupun eksternal merasa aman dan nyaman selama berada atau menggunakan ruangan tersebut).

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INTRODUCTION

The World Health Organization (WHO) on March 11, 2020 in a press release declared COVID-19 as a pandemic. The Indonesian government has also declared it a national disaster through the issuance of Presidential Decree No. 12 of 2020 concerning the Determination of Non-Natural Disasters for the Spread of Corona Virus Disease 2019 (Covid-19). Of course, this condition requires hospitals to prepare themselves, especially in terms of treatment rooms for patients with COVID-19 symptoms.

In making a special isolation room for COVID-19, there are several requirements that must be met as stated in the Technical Guidelines for Building and Infrastructure Isolation Room for Emerging Infectious Diseases (PIE) 2020. Starting with the building requirements, including the location of the isolation room unit on the hospital site plan, the principle of area management, space programs, building components and materials, and building structures. Then the infrastructure sector starts from the clean water system, waste management system, electricity system, air conditioning system, and communication system. Which is to anticipate the occurrence of disease transmission.

Shared rooms are considered as an alternative, when the number of single rooms is limited for patients with mild COVID-19 symptoms. Thus, patients with mild symptoms can be treated in a non-negative pressure room, while patients with severe symptoms that may produce aerosol activity can be treated in a negative pressure room. This grouping has the advantage of preventing the spread of the disease to the community by treating patients with mild symptoms (Hyun et al., 2021).

Post-occupancy evaluation (POE) is the process of systematically evaluating the performance of a building after it has been built and occupied for some time. EPH differs from other building performance evaluations in that it focuses on the building occupants' needs, including health, safety, security, functionality and efficiency, psychological comfort, aesthetic quality, and satisfaction (Preiser, 2001). This is to see also how a building works spatially, socially and culturally, is seen as a unique contribution that can be brought by architects in developing the POE agenda (Hay et al., 2018).

Some of the studies that have been carried out in the COVID-19 isolation room include: 1) COVID-19: Comparing the applicability of shared room and single room occupancy (Hyun et al., 2021) which discusses the use of shared rooms as an alternative in the treatment of patients with mild symptoms, 2) Performance analysis of portable HEPA filters and temporary plastic anterooms on the spread of surrogate coronavirus (Mousavi et al., 2020a) which discusses the existence of a temporary anteroom that can prevent almost 98% of aerosols from spreading to the nearest corridor, 3) Air and Environmental Contamination Caused by COVID-19 Patients: a Multi Center Study (Kim et al., 2020) which discusses airborne spread > 2 meters rarely occurs, if there are no measures that generate aerosols and routine disinfection of swabs to prevent spread.

The purpose of this study was to evaluate the suitability and availability of facilities and infrastructure for the COVID-19 isolation room at As - Suyuthiyah Hospital Pati with the Technical Guidelines for Building and Infrastructure of the Isolation Room for Emerging Infectious Diseases (PIE) in 2020. Then evaluate the facilities and infrastructure of the COVID-19 Isolation Room in RS As - Suyuthiyah Pati in terms of safety, security, and comfort, according to users.

METHOD

Research design

This type of research is a mixed methods research. The first method is descriptive quantitative. Data were obtained from measurements of temperature, lighting, noise, humidity, and microbiological quality in the COVID-19 Isolation Room, followed by questionnaire data filled out by internal and external users with descriptive presentation. The qualitative method in this research is a case study type. The data was obtained from the results of observations of the physical condition of the COVID-19 isolation room adjusted to the Technical Guidelines for Building and Infrastructure of the Isolation Room for Emerging Infectious Diseases (PIE) in 2020.

Participant characteristics

Research subjects for quantitative data, namely respondents from internal and external users, were given a questionnaire regarding the perceptions of users of the COVID-19 isolation room at As-Suyuthiyah Hospital Pati from the aspects of safety, comfort, and security. Internal users consist of general practitioners, nurses, medical laboratory technician, and cleaners, a total of 27 respondents. External users consisting of COVID-19 patients who were declared cured after being hospitalized in the COVID-19 Isolation Room of As Suyuthiyah Hospital, Pati, a total of 38 respondents.

Sampling procedures

The research subjects for the physical qualitative data of the COVID-19 isolation room at As-Suyuthiyah Hospital Pati which were seen from the technical aspect consisted of lighting, temperature, humidity, noise, air circulation, and microbiological quality; functional aspects consist of way-finding, sign and symbol, space utilization and space facilities; and behavioral aspects consist of cleanliness, comfort, and safety.

The object of this research is the COVID-19 Isolation Room of As - Suyuthiyah Pati Hospital which consists of 15 beds. Data collection was carried out by measuring the physical performance of the building and comparing it with the standards in the 2020 Technical Guidelines for Building and Infrastructure Isolation of Emerging Infectious Diseases (PIE).

Quantitative research instruments by measuring temperature, humidity, lighting, noise, and quality levels of microorganisms, were carried out in the period March – November 2021. Then distributed electronic questionnaires, which were sent via a google form link via the WhatsApp application filled in by building users, both internal and external users. external. This study will use respondents to explore their perceptions about the physical condition of the COVID-19 Isolation Room, both from the aspect of safety, security, and comfort in the COVID-19 Isolation Room of As - Suyuthiyah Hospital Pati, carried out in the period September - October 2021.

Qualitative research instruments by conducting field observations with the help of check lists and pictures made by researchers with cameras. Observations are carried out within a period of 1 month, in mid-July – August 2021.

Data analysis

The validity test in quantitative research uses the Pearson bivariate correlation analysis technique, where if the Pearson correlating value is above r table then it is called valid. The reliability test in quantitative research uses Cronbach's Alpha, where if the value is above 0.600 it is said to be reliable. The research for qualitative data validity is done by triangulating sources. That is by comparing data from observations or observations with data from user answers. The next way is to re-check the data collection process, both about the data collected, data reduction, data presentation, and decision making.

RESULTS AND DISCUSSION

RS As – Suyuthiyah Pati is a type D private hospital owned by Pesantren Raudlatul Ulum Pati, becoming one of the third-line COVID-19 referral hospitals in Pati Regency based on Regent's Decree No. 445 / 1219 Year 2020. In an emergency situation with some limited building area, number of officers, and a lack of time, RS As – Suyuthiyah Pati continues to try to comply with the directives issued by the Pati Regent and the Pati District Health Office to prepare a COVID-19 isolation room. This is As Hospital – Suyuthiyah Pati, preparing 15 beds for the COVID-19 isolation room.

This service began in stages in August 2020 initially by preparing 2 beds placed in the isolation room of the Emergency Installation. Then in mid-October 2020, he opened an isolation room called the Umar Room on the 2nd floor of the former hall which was no longer in use. The hall was renovated into several rooms as needed, and can accommodate 6 patients. Renovation takes about 1 month. Continued in November 2020 the area adjacent to Umar's room, namely the Midwifery Installation area, was also renovated into an isolation room containing 9 beds, then a door was made between Umar and Fatimah so that these

two areas were directly connected. So that in total it can ideally treat 15 beds.

The idea of designing isolation rooms with sufficient distance from adjacent patient rooms and placing diffusers near doors can reduce the risk of secondary airborne infections. It should also be noted that the source of infection may be closer to the nurse station than the patient room (Mousavi & Grosskopf, 2015). HEPA filters in air purifiers that are used for a long time have a higher proportion of bacteria than dust (Guo et al., 2020).

As shown in table 1, the Umar area in the patient care room and hallway is equipped with a negative pressure system with a HEPA Filter (High - Efficiency Particulate Air Filter) while the Fatimah area uses mechanical ventilation with an exhaust fan connected by pipes to the roof. Umar and Fatimah Isolation Room which will be part of this research.

Several officers were assigned to the COVID-19 isolation room service at the As-Suyuthiyah Pati Hospital, including 10 general practitioners, 10 nurses, 3 midwives, 4 medical laboratory technician, 11 cleaners, as well as several specialist doctors (adjusting cases), 4 radiographers, 2 pharmacist, and 1 spiritual guidance officer.

Every patient who is being treated in this COVID-19 isolation room will be visited by the Doctor in Charge of Service at least twice while being treated. Every morning a follow-up of the patient's condition is carried out by the attending physician and the results are reported to a specialist. Nurse on duty in 24 hours divided into three times morning, afternoon, and evening. Where in one guard period there are 3-4 nurses on duty, who will take turns on standby in the isolation room for a maximum of 4 hours (alternately). The cleaning staff cleans the patient's room area, hallway, toilet, twice a day in the morning and afternoon, and transfers infectious waste generated from patients to the Infectious Waste Temporary Storage Area.

For spiritual needs, spiritual guidance officers will come in every afternoon / evening to guide patients who have difficulty in worship as well as provide motivation for healing.

Table 1
Comparison of COVID-19 Isolation Room Facilities with Guiding Standards

Room	Description	Standard
Patient reception room	Enough for 1 bed and handover discussion for 4 officers	Conditional Prepared in each treatment room
Anteroom	Equipped with interlock system. No negative pressure.	At least the patient bed can enter Two doors with interlock system The pressure of the room is made -5Pa against the corridor
Patient care room	Umar's room area: 2.45 x 3 m, negative pressure -5 to -25 Pa Fatimah's room area: 4.8 x 3.6 m, using mechanical ventilation in the form of an exhaust fan that is connected to the exit pipe In general, Umar's room does not meet the standard. Umar's treatment area was built within 1 month, previously it was a former 2nd floor hall that was no longer used.	$\pm 16 \text{ m}^2$ or $\pm 4 \times 4 \text{ m}$ Negative pressure system One room for one patient One room more than one patient distance between beds 2.4m Room pressure -15Pa
Toilet	Exists and works fine.	For Officers and Patients
Nurse Station	The nurse station is equipped with a CCTV monitor that is connected between the treatment area and	Reach patients quickly and easily Nurse-patient communication system

Spoelhook Janitor	the nurse caller Negative pressure -5Pa to -15Pa Exists and works fine.	Pressure -10Pa Conditional
Storage room for medical devices / bed linen / pharmacy	There is space and a cupboard for storage of medical equipment / linen / patient medication Don't have mobile X-Ray. Does not have a hospital passed box	Shelves/cupboard The size of the room as needed Separate room for Mobile X-Ray storage Hospital passed-box
Changing room The medical staff's changing room enters	The PPE changing room is equipped with lockers, hand washing facilities, no closet	Consists of an PPE/PPE changing area equipped with lockers, shower room and closet room as well as PPE/PPE placement/container area Hand wash basin
The medical staff's changing room is out	Equipped with toilet, container tub, hand washing area.	Consists of an PPE / PPE changing area equipped with lockers, shower room and closet room as well as PPE / PPE placement/container area Hand wash basin
Corridor	The width of the corridor varies: Umar Hall: 2 m Fatimah Hall: 2.4 Connecting Hall: 1.7 m Corridor has no positive pressure	Minimum corridor width of 2.4 m Corridor is recommended to have positive pressure
Mechanical and Electrical Room	Located outside the COVID-19 isolation room	Room for the placement of electrical panels, isolation transformers and UPS for the needs of electric utility services. Room for placement of HVAC system machines such as AHU. Room for medical gas manifold and medical vacuum
Clean Water System	Exists and works fine	The minimum capacity of clean water for isolation room buildings is 500 liters per day times the number of beds
Waste Management System	All effluent lines are connected to the Wastewater Treatment Plant network. All solid waste generated from patients, for example food waste, all goes to infectious waste management. All garbage in the isolation room with yellow plastic (all considered infectious waste)	Distributed to the Wastewater Treatment Plant network All waste generated from patients must be disposed of as medical waste
Dirty water		
Solid waste		
Electricity system	The mains electrical system is 1 with the front building / main electrical system.	
Medical Gas and Medical Vacuum System	Centralized medical gas (oxygen). Medical vacuum has not been centralized, using a portable vacuum.	Better to be centralized. The use of oxygen cylinders directly beside the patient is not recommended.
Air Conditioning System	Negative pressure system in the patient room and in Umar's hallway. The results of temperature and humidity measurements will be explained further in tables 2 and 3 regarding environmental tests	Setting the temperature, humidity, amount of ventilation air, cleanliness and positive and negative pressure in the room and the distribution of air in the room The isolation treatment room is equipped with an air-tight space (airlock) and the pressure of the room is made -5Pa against the corridor, while the patient isolation treatment room including the toilet is made -15Pa pressure Room temperature is made 24±20C Relative humidity 60%
Communication System	Exists and works fine	Nurse call Intercom equipment
Area Air Shower	-	The air shower uses high pressure, HEPA/ULPA filtered air between the corridor and the changing room for officers who will leave the isolation room building

Note: the condition of the room is compared to the standard according to the Pedoman Teknis Sarana dan Prasarana Ruang Isolasi Penyakit Infeksi Emerging dari Direktorat Jenderal Pelayanan Kesehatan Tahun 2020.

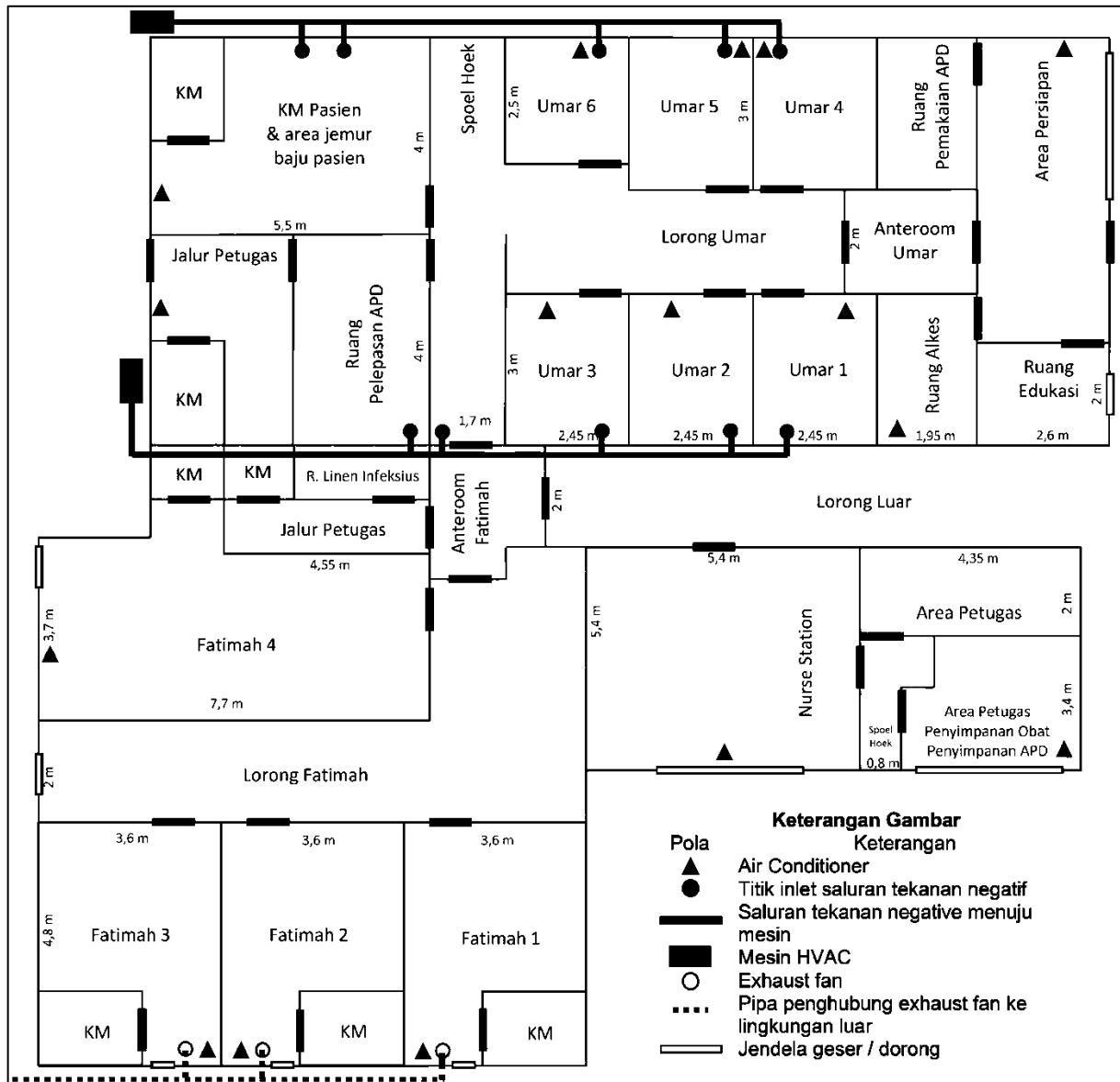


Figure 1. Layout of the COVID-19 Isolation Room of As-Suyuthiyah Hospital

Table 2
 Microbiological Test Results (Total Plate Number)

Area		Result 1 (Maret 2021)	Result 2 (Agustus 2021)	Description	Unit
Umar Room	Wipe the floor	4	4	Good	0 – 5 CFU/cm ²
	Wipe the wall	<0,1	0,1	Good	
Umar' s Anteroom	Wipe the floor	2	1	Good	0 – 5 CFU/cm ²
	Wipe the wall	0,1	<0,1	Good	
Umar Hall	Wipe the floor	1,8	2	Good	0 – 5 CFU/cm ²
	Wipe the wall	0,1	0,1	Good	
Fatimah Room	Wipe the floor	4	1	Good	0 – 5 CFU/cm ²
	Wipe the wall	0,1	<0,1	Good	
Fatimah' s Anteroom	Wipe the floor	2,6	3	Good	0 – 5 CFU/cm ²
	Wipe the wall	0,1	0,1	Good	

Fatimah Hall	Wipe the floor	12,5	7	Bad	0 – 5 CFU/cm ²
	Wipe the wall	0,1	2	Good	

Microbiological Test Examination

Microbiological examination was carried out by measuring the ALT value at several points in the isolation room area of Umar and Fatimah by wiping the floor and wiping the walls. The examination was carried out twice, namely in March and August 2020 by a team from the Central Java Provincial Health Laboratory and Medical Device Testing Center. The quality standard is taken from the Regulation of the Minister of Health No. 7 of 2019 concerning Hospital Environmental Health.

In table 2, the results of the ALT test at 6 sample points showed quite good results. At these 6 points, a wall swab test and a floor swab test were carried out, two inspections were

carried out, namely in March 2021 and August 2021, so there were a total of 24 samples. Of these 24 samples, there were 2 samples that did not meet the quality standards, namely the ALT examination on the floor swab in the hallway of the Fatimah room, where in March 2021 the value was 12.5 while in August the value was 7, where the standard was 0-5 CFU/ cm². This result is possible due to several factors that exist in the hallway area of Fatimah's room, where the observations of this area are not equipped with negative pressure, there is an open ventilation window at the top measuring 40 cm x 20 cm which is used for air circulation (related to the outside area), and this hallway is an area that is mostly carried out by officers.

Table 3
Results of the Environmental Test for the COVID-19 Isolation Room

Indicator (Unit)	Raw Value		Tool 1		Tool 2 (independent)					
	A	B	Umar Hall	Fatimah Hall	Umar Anteroom	Umar Hall	Umar Room	Fatimah Hall	Fatimah Room	Nurse Station
Lighting (Lux)	200		105	110	45,16	95,84	278,33	89,36	158,8	78,19
Noise (dBa)	45		59,05	58,2	41,62	43,3	45,71	58,93	49,94	54,16
Temperature (°C)	32-34	24±2	32,25	31,35	28,58	28,31	27,32	29,53	30,01	29,3
Humidity (%Rh)	40 - 60	60	66,35	66,9	68,07	65,82	62,28	74,19	72,36	73,88
Air Flow	-	-	-	-	-	-	40,95	9,3	36,88	11,75

Note: The standard value of A is based on Minister of Health Regulation No. 7 of 2019, while B is based on Pedoman Teknis Bangunan dan Prasarana Ruang Isolasi Penyakit Infeksi Emerging (PIE) Tahun 2020.

Environmental Test Inspection

In Table 3, the results of tool 1 are the average of the two tests within a 3-month difference between the first and second tests. The examination was carried out by officers from the Center for Health Laboratory and Medical Device Testing of the Central Java Provincial Health Office, in March 2021 in the time range from 10.00 – 12.45, and in August 2021 in the time range between 09.30 – 12.00. The results of tool 2 are the average of six tests within 3 consecutive days, the test is carried out every morning (09.00 – 11.00) and afternoon (15.00 – 17.00) in November 2021, where the examination is carried out independently.

Evaluation of the Use of the COVID-19 Isolation Room

This activity is intended to collect, archive, and share information about success or failure in processes, products, and other building related areas to improve building quality. Ideally, the information obtained through POE is acquired in the learning program and used in the planning, programming, and process design of new facilities to build on successes and avoid repeating mistakes (Preiser, 2001).

In this study, the evaluation was carried out by distributing an electronic questionnaire with a google form

where a link was sent via WhatsApp to assess user perceptions to external customers (38 respondents), namely patients who had been treated or patient waitors (due to limited patient activities) in the COVID-19 Isolation Room of RS As – Suyuthiyah Pati, and to internal customers (27 respondents) namely officers on special day-to-day duties in the isolation room consisting of doctors, nurses, laboratory officers, and cleaning services.

The questionnaire for internal customers consists of 14 statements with a choice of answers on a Likert scale of 1-5, while the questionnaire for external customers consists of 11 statements with a choice of answers on a Likert scale of 1-5. 05, 27) is 0.381. Therefore, the item is declared valid if the Pearson correlation value (r count) is above 0.381. While the research sample for external users amounted to 38 respondents so that the r table value (0.05, 38) was 0.320. The item is declared valid if the Pearson correlation value (r count) is above 0.320. Cronbach's Alpha value for each variable is more than 0.6 so it can be said that the instrument used in the study has good reliability. From the results of the validity and reliability tests that have been carried out, it can be concluded that the questionnaire is feasible to be used as a research instrument.

Table 4
Characteristics of Respondents

Variabel		Pengguna Internal		Pengguna Eksternal	
Age (years)	Average	26,5		43,34	
	Min – Max	20 – 34		27 – 58	
Sex	Man	48%		36,8%	
	Women	52%		63,2%	
Education	Doctor		22,2%	Bachelor	42,1%
	Nurse		25,9%	Diploma	5,3%
	Laboratory Worker		14,8%	Senior High Scholl	47,4%
	Cleaning Services		37%	Junior High School	5,3%

Table5
Internal Customer Questionnaire Results

Statement	Result (Likert Scale)				
	1	2	3	4	5
The position of the entrance to the isolation room makes it easier for officers to enter and leave the room			37%	48,1%	14,8%
The isolation room is adjacent to the nurse/doctor's room so it's easy to monitor all patients			25,9%	63%	11,1%
You are disturbed by the family / patient waiting in the isolation room	3,7%	3,7%	55,6%	33,3%	3,7%
The current isolation room layout makes it easier for you to work			14,8%	63%	14,8%
You feel comfortable when you work with the lighting in the isolation room all day long			25,9%	59,3%	14,8%
Noise-free isolation room for both medical equipment and outside sounds/vehicles			40,7%	40,7%	18,5%
You already feel comfortable with the ventilation in the isolation room		3,7%	33,3%	44,4%	18,5%
You already feel comfortable working with the current state of the isolation room		3,7%	44,4%	33,3%	18,5%
You feel safe working in the isolation room			51,9%	33,3%	14,8%
You feel comfortable with your break room	3,7%	18,5%	40,7%	25,9%	11,1%
Water needs for the bathroom / other activities run smoothly		7,4%	14,8%	59,3%	18,5%
The bathroom for your needs works well		3,7%	29,6%	51,9%	14,8%
You are disturbed by the location of the storage of medical equipment / other equipment	3,7%	11,1%	51,9%	25,9%	7,4%
The floor in the isolation room is clean			14,8%	63,8%	22,2%

Notes: 1 Strongly Disagree / Strongly Disagree ; 2 Less / Disagree ; 3 Enough ; 4 OK / Agree ; 5 Very Good / Strongly Agree

In general, the results of the questionnaire for internal customers show that officers generally feel comfortable and safe when on duty in the COVID-19 isolation room. However, due to limited area and resources, there are several notes that can be taken into consideration for improvement. The nurse station area can see the Fatimah area freely, while the Umar area can be monitored through the nurse station CCTV monitor. The presence of officers on standby inside and equipped with nurse callers and telephone officers facilitates coordination of patient needs. Noise in this isolation room can be influenced by several factors including, the sound of medical equipment being used, the sound of the HEPA filter machine, the sound of staff activities in the room, the sound of patient activities, outside conditions where below is the road to the parking lot behind the hospital and close to the emergency room. According to the Regulation of the Minister of Health Number 7 of 2019, the temperature quality standard is 32-34 °C, humidity 40-60% Rh. Meanwhile, according to the Building Guidelines for Isolation of Emerging Infections, the room temperature is set at 24±2 °C with a relative humidity of 60%. On the other hand, officers

still use complete level 2 or 3 PPE as needed. Due to the limited space where the isolation room must pay attention to the safe zone, so there are limitations in providing the officer's rest room. Officers who are on standby in areas that are in direct contact with patients only have chairs to sit in the hallway area while still using complete PPE, this is felt by the officers to be uncomfortable. Several activities are carried out inside, including praying until the 4 hour standby time is over. There are a lot of medical equipment in the area in the isolation room, including emergency trolleys, defibrillators, High Flow Nasal Canulla (HFNC), and mobile oxygen (6m³ oxygen cylinder with trolley). When a patient needs HFNC, and several tools such as a syringe pump and a bedside monitor, besides the patient, of course, the officers' movements are increasingly limited.

The cleaning service staff routinely performs cleaning twice a day for the morning and evening, also every patient who has been discharged is declared cured / discarded, the patient's room is immediately sterilized. Research suggests that environmental contamination from SARS-CoV-2 may be a route of transmission of the virus (Ahn et al., 2020). SARS-

Cov 2 was detected in several air samples collected from patient rooms in hospitals (Rahmani et al., 2020). Transmission of SARS-CoV-2 over long distances (> 2 m) in the air is rare, especially in the absence of aerosol-generating procedures. Extensive surface contamination can be spread,

except in rooms that are regularly cleaned with disinfectants (Kim et al., 2020). As well as the importance of good ventilation and sterilization of toilets as potential sources of virus spread (Liu et al., 2020).

Tabel 6
External Customer Questionnaire Results

Statement	Result				
	1	2	3	4	5
The position of the entrance to the Isolation Room is easy to reach by the patient / patient attendant			34,2%	63,2%	3,7%
Isolation room is comfortable to live in			15,8%	76,3%	7,9%
The isolation room is quite spacious		5,3%	28,9%	60,5%	5,3%
Supporting facilities (sofa/bed) are available for patient waiting	10,5%	34,2%	31,6%	18,4%	5,3%
Isolation Room is free from noise (be it the sound of medical devices or from outside / vehicles)			15,8%	78,9%	5,3%
You feel comfortable with the lighting in the Isolation Room		2,6%	10,5%	73,7%	13,2%
Good Isolation Room Air Conditioning			18,4%	68,4%	13,2%
There are good bathroom facilities			7,9%	78,9%	13,2%
Water needs for the bathroom or other activities smoothly			5,3%	71,1%	23,7%
Clean Isolation Room Floor			7,9%	65,8%	26,3%
Isolation Room Floor is not slippery		2,6%	7,9%	71,1%	18,4%

Notes: 1 Strongly Disagree / Strongly Disagree ; 2 Less / Disagree ; 3 Enough ; 4 OK / Agree ; 5 Very Good / Strongly Agree

Likewise with the results of questionnaires on external customers where in general they feel comfortable and safe. However, there are small notes that can also be considered for improvement. Umar's room area is 2.45 mx 3 m, negative pressure is -5 to -25 Pa, while Fatimah's room is 4.8 x 3.6 m, using mechanical ventilation in the form of an exhaust fan connected to the exit pipe. Umar's area feels cramped but has the same facilities as Fatimah such as Bed 3 positions, TV, AC, and Nurse Caller. Because in principle the isolation room should not have a guard except for a few conditions, so there are no special facilities for the watchdog. In the Fatimah area, there is still a temporary sofa available for Umar due to limited space (area) so he cannot provide special facilities.

However, assessing the post-occupancy evaluation of building performance in hospitals is a complex activity and requires varying resources. Management, competence, culture and awareness are believed to be the things that complicate the success of POE (Woon et al., 2014).

In the event of an outbreak, such as the current SARS-CoV-2 virus, usually the ventilation system of hospital isolation rooms where infectious patients are treated is quite supportive. These chambers are designed to contain and rapidly remove pathogenic agents. But in a surge in patients, there may be an insufficient number of rooms like this, which some countries such as Italy, the United States, and China have experienced. Therefore, innovative steps must be taken to prepare hospital air systems during a pandemic (Mousavi et al., 2020). On the other hand, visitors and staff who work in hospitals that treat patients who have Covid must be aware of the possibility of the presence of the virus outside the patient's room (Dowell et al., 2004).

The readiness of facilities to meet the standards/technical requirements of buildings and health infrastructure, in this case including isolation treatment rooms, is very necessary. So that the quality of nursing services for contact, droplet and airborne transmission patients can be achieved optimally and the transmission of infectious diseases to health workers who serve can be optimally

prevented (Direktorat Jenderal Pelayanan Kesehatan, 2020). Patients with respiratory manifestations of COVID-19 have the potential to produce aerosols, while these aerosols can serve as a source of virus transmission (Lednicky et al., 2020).

This means that post-occupancy evaluation (POE) is a comprehensive and rigorous building evaluation process after the building/unit has been built and occupied for some time (Preiser, 2001). So there are two main components, namely people as users and buildings and their components as the built environment that accommodates user activities.

The architectural aspect of the building emerges from the Post-Occupancy Evaluation approach. The implementation of post-occupancy evaluation ensures the best possible fulfillment of user needs, reduces cases of contamination originating from unwanted flow junctions, and ensures that the circulation facilities within the building meet daily needs (Angelo Leitner Thomazoni et al., 2016).

LIMITATIONS OF THE STUDY

This research was conducted under the conditions of the COVID-19 pandemic where it was difficult to find respondents who were willing to take part in this research. Environmental testing also cannot be carried out at any time considering that this room is a special room with a high infection rate, so it requires special time to wait for patients not too crowded because of fears of contracting the disease.

CONCLUSIONS AND SUGGESTIONS

Based on the results of the research and discussion that have been described previously, it can be concluded that the results of observations and physical measurements of the building show that most of the COVID-19 Isolation Rooms at the As - Suyuthiyah Hospital have met the building standards set by the government through the Technical Guidelines for Building and Infrastructure Isolation Rooms PIE from the Directorate General of Health Services in 2020. The construction of this room was carried out in a fast time

with limited space but the layout of the room was designed according to the flow for the safety, security, and comfort of officers and patients. In microbiological tests and environmental tests, there are several measurement items that do not meet quality standards but are felt to have little effect on staff and patients. The results from internal and external questionnaires show that the majority of users of the COVID-19 Isolation Room feel safe and comfortable as long as the officers are on duty in this room and while patients are hospitalized in this room.

Recommendations regarding the post-occupancy evaluation of the COVID-19 isolation room at the As - Suyuthiyah Hospital Pati, namely: 1) for the hospital manager to improve several things which from the results of the study are still less than the established standard considering that the COVID-19 pandemic has not been declared over by government, 2) for further research it is recommended to conduct more specific research with a larger number of respondent samples.

ETHICAL CONSIDERATIONS

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Conflict of Interest Statement

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