

Mapping Analysis of Personal Protective Equipment Usage as an Effort to Reach Zero Accident at Ponorogo Hospital

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ABSTRACT

Introduction: One of the efforts to reduce the risk of occupational accident and occupational diseases is awareness regarding the importance of the safety and health of workers in hospitals, which is also a top priority in hospitals during a pandemic situation. The application of health protocols and the use of Personal Protective Equipment (PPE) are the main lines of defense against the risk of disease and occupational accident. So that the use of Personal Protective Equipment (PPE) is very important, especially for workers during a pandemic. The purpose of this study was to analyze the mapping of the use of Personal Protective Equipment (PPE) with the incidence of occupational accident. **Methods:** The research used was an analytic observational type using a cross sectional approach, besides that the researchers conducted a survey of the conditions in the hospital. With a sample of 179 respondents in all parts of the hospital. **Results:** There is an effect of the use of PPE on the incidence of work accidents and it is necessary to have a mapping of PPE, such as gloves, safety shoes, surgical glasses, surgical gown, apron, mask, face shield, head protection, safety helmet, safety shoes, body harness, fire-resistant clothing, fire-resistant helmet, fire-resistant goggles, and fire-resistant gloves. **Conclusion:** Control is needed in the form of procurement of Personal Protective Equipment at Hospital X, including face shields, aprons, gloves, masks, head protectors, and safety shoes.

Keywords: hospital, occupational safety and health, personal protective equipment

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INTRODUCTION

Policy regarding workers' protection in various hospitals in the United Kingdom and almost all countries changes from time to time, particularly to prevent transmission, such as through contact, droplet, and air, during a pandemic. The safe use of equipment that will protect the user is a necessity for all workplaces, hospitals, health care, and social communities. Incorrect and improper equipment usage or equipment that is used too often has the risk of cross-contagion including from patient to nurses, patient to person, one health worker to another health worker, and self-inoculation (Castro-Sánchez *et al.*, 2021).

Occupational health generally refers to the condition of being free from physical and mental pain due to the work environment (Labib *et al.*, 2020). In a study that has been conducted previously,

it was found that performing hazardous laboratory or clinical work while wearing Personal Protective Equipment involves various limitations compared to the same work without equipment that will protect the user. For example, the Ebola virus has led to innovations and developments in the design of equipment that will protect health workers, workers, and the general public (Arif *et al.*, 2021).

In general, health service development follows the pattern of business competition, in this case, the competition is by submitting a competitive advantage over each other. This further proves that health services have developed into a strategic industry that can be managed well (Diannita, 2015). Hospital is a workplace that has a high risk of the safety and health of patients, health workers, doctors, nurses, midwives, and all people in the hospital. In this case, control of sources and potential hazards in hospitals can be done by using equipment that can protect the user (Syam, Sari and Hastuti, 2020).

Reducing the risk of accident and occupational diseases at work are closely related to work tools, work processes, workplaces, personal protective equipment facilities, and ways of doing work.

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Therefore, efforts to harmonize the existence of work capacity, workload, use of personal protective equipment, and working environmental conditions are necessary (Suwardi and Daryanto, 2017).

One of the instruments that can protect workers is personal protective equipment for the health and safety of workers. Companies, hospitals, environment, and surrounding community have the potential to cause accidents. The existence of occupational health and safety aims to prevent, reduce, and even eliminate the risk of those occupational accident or zero accidents (Rori, Bongakaraeng and Pandean, 2018).

An integral part of the employment system and human resources in both the formal and informal sectors is awareness regarding the prevention of occupational diseases and accidents. Proper attitude in wearing equipment that will protect the user is needed in order to reduce the number of occupational accident (Rudyarti, 2017). In this case, factors that cause accidents and occupational diseases that occur in nurses in hospitals are behavioral factors, unsafe conditions, as well as inadequate and non-standard personal protective equipment (Basri, Rahma and Diannita, 2020).

Hospital is a source of infection for the hospital staff, patients, and visitors. Risk of infection in the hospital known as Nosocomial infection is a global health issue. In this case, there are two types of infection, namely infectious and non-infectious (Nurmalia *et al.*, 2019).

The use of Personal Protective Equipment (PPE) contributes 22% to work accident, while knowledge variable contributes 16%. In addition, there is also a relationship between knowledge and the use of Personal Protective Equipment (PPE) which contributes 35.6% to the incidence of occupational accident at work, so there is a significant relationship between occupational health and safety and the use of equipment that will protect the user from occupational accident (Rudyarti, 2017).

Hospital is one of the workplaces with various threats that can cause health impacts (Dwiastuti, Suroto and Kurniawan, 2018). The use of Personal Protective Equipment (PPE) is very important to ensure the safety of health workers and patients. Equipment that will protect the user has been provided by the hospitals around the world, in this case, a major hospital group in London have developed equipment that will protect the user to

fight viruses and disease (Castro-Sánchez *et al.*, 2021).

The hazards of the work environment in the form of physical, biological, and chemical aspects require control can be done to overcome the hazards of the work environment. However, the technical control on the source of the hazard itself is considered the most effective and is the first recommended alternative, which is the use of Personal Protective Equipment (Zubaidah, Arifin and Jaya, 2019). The potential shortage of Personal Protective Equipment (PPE) calls for the use of appropriate and standardized equipment that will protect the user, which is also expected to become a health protocol to protect health workers in hospitals, especially during the corona-19 virus period where 54% of hospitals have implemented PPE conservation protocol (Steuart *et al.*, 2020).

Occupational Health and Safety at hospital is a form of activity with the aim of ensuring and protecting occupational safety and health for hospital workers, patients, patient companions, and hospital visitors. This is a preventive effort of accident at work and occupational diseases in the hospital environment (Regulation of the Minister of Health of the Republic of Indonesia, 2016).

Knowledge and behavior of using equipment that will protect users are needed to prevent and control infections, both infectious and non-infectious, as well as cross-infection and transfer of infectious agents between patients and health workers (Arbianti and Hanirizqy, 2019).

Hospital has implemented occupational safety and health efforts supported by prevention and control of workplace hazards in the form of noise measuring devices, Light Fire Extinguisher, hospital infrastructure in terms of safety, and human resources in the field of occupational safety and health education. Data related to hearing loss of workers at Hospital shows that there are still complaints of noise in the form of reduced hearing intensity of workers as well as effects on hearing in the form of buzzing ears. Based on these data, it is proven that interference with workers still occurs a lot. Hospitals can be interpreted as public facilities for the health of both individual and wider community (Diannita, 2020). Meanwhile, education is one of the efforts to improve human resources (Arrosit, 2021).

Data show that occupational accident still occur at hospital, both infectious and non-infectious. The accidents can be in the forms of needle stick accident when giving injections to patients, being exposed to blood when cleaning wounds, falls, slips, stab wounds when taking blood samples, as well as being exposed to patient's blood, urine, and feces when inserting a catheter.

Based on the description above, Zero Accident has not been achieved at X Hospital so it is necessary to analyze the mapping related to Personal Protective Equipment (PPE) in order to achieve Zero Accident. Furthermore, the current research was carried out based on the secondary data obtained from Hospital X regarding the incidence of work accidents and recommendations for procurement of Personal Protector Equipment.

METHODS

This research was implemented in 2021 concerning the use of Personal Protective Equipment (PPE) using hospital secondary data. In this case, data collection is an activity carried out by researchers as a process of approaching the subject and collecting data and the characteristics of the subject needed in research as supporting data (Nursalam, 2020).

According to Nursalam and percentages obtained regarding the use of PPE, category (1) is considered good if the score is 76% - 100%, (2) considered to be sufficient if the value is 56% - 75% (3) considered to be poor if the value is 40% - 55% and (4) is considered to be bad if the value is < 40% (Nursalam, 2020).

The data employed in the current research is secondary data in the forms of occupational accident and personal protective equipment facilities data obtained from the hospitals. Furthermore, the respondents involved in the current research was determined. After the determination, personal protective equipment available were mapped. Last, research permit was submitted to the Director of Hospital X.

The mapping was done by looking at secondary data, namely the number of work accidents occurred at the hospital, both infectious and non-infectious. After the data were obtained, mapping was done on the PPE availability in the hospital. Furthermore, after the mapping has been completed, the PPE

needed by the hospital was mapped as an effort to prevent the hazard.

RESULT

Hospital X is one of the hospitals in East Java that has been accredited Plenary, but still had work accidents so efforts are needed to achieve zero accident at the Hospital X.

Frequency Distribution on the Use of Personal Protective Equipment (PPE) in Hospital X in 2021

Table 1 shows that among 179 respondents involved in the current research, most of them used Personal Protective Equipment (PPE) properly, which is 143 respondents (79.9%).

Cross Tabulation of the Use of Personal Protective Equipment (PPE) with Work Accidents in Hospital X 2021

Based on table 2, it shows that among 179 respondents studied, most of them use PPE properly and have never had an accident at work, which is as many as 141 respondents (78.8%). Furthermore, based on the Chi-Square test, the p value obtained was 0.000 (OR = 39.848), indicating that there was a relationship between the use of Personal Protective Equipment (PPE) and work accident.

Results of Data Analysis related to hazard and PPE mapping in Hospital X

In order to find out the results, multivariate statistical tests were carried out using logistic regression analysis assisted by SPSS version 16 software for Windows. The analysis results obtained the parameter value or regression coefficient for the use of PPE variable of a positive value of 3.998,

Table 1. Frequency Distribution on the Use of Personal Protective Equipment (PPE) in Hospital X in 2021

Use of PPE	N	f (%)
Good	143	79.9
Sufficient	36	20.1
Poor	0	0.0
Bad	0	0.0
Total	179	100.0

Table 2. Cross Tabulation of the Use of Personal Protective Equipment (PPE) with Work Accidents in Hospital X in 2021

Use of PPE	Work Accidents				P	OR	IK (95%)	
	Not Yet		Yes				Min	Max
	N	f (%)	N	f (%)				
Good	141	78.8	2	1.1	0.000	39.848	8.436	188.226
Sufficient	23	12.8	13	7.3				
Poor	0	0.0	0	0.0				
Bad	0	0.0	0	0.0				
Total	164	91.6	15	8.4				

meaning that the better the use of Personal Protective Equipment (PPE), the lower the accident at work or vice versa.

Furthermore, the significant value of the use of Personal Protective Equipment (PPE) variable was $0.005 < 0.05$, thus H_0 is rejected. Therefore, it can be summed up that there is an effect of using Personal Protective Equipment (PPE) on the incidence of accident at work. The following is research data related to accident at work and Mapping of Personal Protective Equipment (PPE) to create Zero Accidents.

Table 3 shows work accidents, including the infectious and non-infectious, in the form of needle sticks accident when cleaning equipment, blood sampling, infusion, SC surgery, infusion jams, being stacked by the needle when washing, hitting galvalum iron when walking in the room, falling on an object while working, falling on equipment when going home from work, when going down stairs, caught fire while welding, falling when going down stairs after finishing work, getting crust, and exposed to cooking utensils. Based on these data presented in Table. 3, it is necessary to map the Personal Protective Equipment (PPE) as an effort by the hospital to reduce and prevent the incidence of work accidents and occupational diseases, that is:

There are approximately seventeen Personal Protective Equipment (PPE) that complies with standards that should be available in the hospital, considering that there have been accident at work and occupational diseases in the form of infectious and non-infectious. Based on these data, Personal Protective Equipment must be used by workers every time they work according to risk factors. If the workforce does not wear Personal Protective Equipment (PPE) regularly at work, it can reduce the risk of work-related accidents and occupational diseases. The following figure 1 is a mapping of the Personal Protective Equipment (PPE) that complies

Table 3. Mapping of PPE and Infectious and Non-Infectious Work Accidents in Hospital X 2021

Type	Name of Work Accident	Personal Protective Equipment Needed
Infectious	Needle sticking accident while cleaning equipment	Safety shoes
		Glove
	Needle sticking accident during SC surgery	Safety shoes
		Glove
		Surgical glasses
		Surgical gown
	Needle sticking accident during blood sampling	Glove
		Safety shoes
	Needle sticking accident during infusion	Glove
		Safety shoes
Needle sticking accident during infusion	Glove	
	Safety shoes	
Biology (viruses, bacteria, fungi, parasites)	Apron	
	Mask	
	Face Shield	
	Apron	
	Safety shoes	
Chemical (antiseptic, reagent, anesthetic gas)	Mask	
	Head Protector	
	Shield Clothing	
	Safety shoes	
Non-Infectious	Physical (temperature, light, noise, electricity, vibration, and radiation)	Head Protector
		Safety shoes
		Ear Muff
		Shield Clothing
	Being hit by work equipment object	Glove
		Shield Clothing
		Safety shoes
Being hit by the galvalum iron while walking	Safety Helmet	
	Shield Clothing	
		Safety shoes
		Safety Helmet

Advance Table 3. Mapping of PPE and Infectious and Non-Infectious Work Accidents in Hospital X 2021

Type	Name of Work Accident	Personal Protective Equipment Needed
Non-Infectious	Being hit while working	Shield Clothing
		Safety shoes
		Safety Helmet
	Bumping to an object of work equipment on the way home from work	Shield Clothing
		Safety shoes
		Safety Helmet
	Falling down when going down stairs	Helmet
		Shield Clothing
		Safety shoes
	Exposed to sparks during welding	Body harness
		Fireproof protective suit
		Fireproof helmet
		Fireproof glasses
	Falling down the stairs after finishing work	Fireproof gloves
Body harness		
Safety shoes		
Exposed to splash of scale/dirt when cleaning the rest of the scale	Shield Clothing	
	Body harness	
Getting hit by cooking utensils when sliding	Safety shoes	
	Body harness	
	Shield Clothing	
Ergonomics (work environment, working methods, and wrong job position)	Gloves	
	Mask	
	Head Protector	
	Safety Shoes	

Source: Secondary Data, 2021

with standards. This is a description of the personal protective equipment in Hospital X. Personal Protective Equipment (PPE) at Hospital X Data was obtained from the hospital as secondary data that are presented in Figure 1 and Figure 2. Based on the regulations, Safety Helmet, Face Shield, Ear Plug, Apron/Coveralls, Hand Protection, Foot Protection, and Safety Harness are necessary (Minister of Manpower and Transmigration, 2010).

Furthermore, Masks and N95 Respirators, Medical Gloves, and Medical Gowns are also needed



Figure 1. Wardrobe and Personal Protective Equipment (PPE) in Hospital X in 2021

by adjusting to the conditions and levels in the hospital. The first Level is Minimal risk where PPE is needed, for example, during basic care, standard isolation, cover gown for visitors, or in a standard medical unit. The second level is low risk, where the PPE is also needed, for example, during blood draw, stitching, and being in the Intensive Care Unit (ICU), or a pathology lab. The third level is moderate risk, where PPE is needed, for example, during arterial blood draw, inserting an Intravenous (IV) line, being in the Emergency Room, or for trauma cases. Fourth level is high risk, where the PPE must be used, for example, during long, fluid intense procedures and surgery as well as when pathogen resistance is needed or infectious or non-airborne diseases are suspected (FDA, 2021). According to the Australian Government, the only modification for preventive measures in hospitals is to use Personal Protective Equipment in the form of particulate filters respirator of P2/N95 (Australian Government Department of Health, 2020).

Furthermore, according to the Regulation of the Minister of Manpower and Transmigration, the following fire protection system tools are needed: (a) Fire Alarm System, (b) Heavy Fire Extinguisher which uses wheels, (c) Fire Extinguisher, (d) Fire-resistance clothing, (f) Automatic sprinkler system, and (g) Smoke control system (Regulation of the

Table 4. Mapping or List of Personal Protective Equipment (PPE) in Hospital X 2021

Personal Protective Equipment (PPE) in Hospital X	Personal Protective Equipment (PPE) base on Regulation	Resource/ Regulation	Personal Protective Equipment (PPE) Needed
Shoes	Safety Helmet	Regulation of Minister of Manpower and Transmigration	Safety Glasses
Helmets	Face Shield		Surgical Glasses
Surgical Glasses	Ear Plug		Apron
Medical Mask	Apron/Coveralls		Face Shield
Fire Extinguisher	Hand Protection		Mask
	Foot Protection		Head protector
	Safety Harness (Minister of Manpower, 2010)		Safety Shoes
			Protective clothing Safety
	Self-Contained Underwater Breathing Apparatus	Food and Drug Administration	Protective clothing
	N95 Respirators		Fireproof protective sui
	Medical Gloves		Fire-resistant gloves
	Medical Gowns (FDA, 2022)		Fire-resistant glasses
			Fire-resistant helmet
	Mask N95	Australian Government	N95 Respirator
	Respirator type N95 (Australian Government, 2021)		Medical Glove
			Medical Gowns
			Helmet
	Fire Alarm System	Minister of Health of the Republic of Indonesi, 2010	
	Heavy Fire Extinguisher which using wheels		
	Fire Extinguisher		
	Body harness		
	Fireproof protective suit		
	Automatic sprinkler system		
	Smoke control system (Minister of Health Republic of Indonesia, 2010).		

Source: Secondary Data, 2021

Minister of Health of the Republic of Indonesia, 2016).

Figure 1 shows the lack of personal protective equipment in hospital X, where there is only one pair of safety shoes, helmet, and protective clothing. Therefore, based on the secondary data, it can be seen that there are many cases of work accidents that occur. In addition, the equipment that will protect users in hospitals that meet the standards is classified as incomplete. Based on the figure, there are personal protective equipment in the form of shoes, helmets, protective clothing, and glasses. Furthermore, data

on work accidents are listed in Table 3 where these PPE have the benefit of protecting the body, in addition to reduce the severity of accidents that may occur (Indrayani and Sukmawati, 2019).

Meanwhile, there are also occupational accident and diseases in the form of infectious and non-infectious diseases at Hospital. This includes needle sticking accident during blood sampling, infusion, cesarean surgery, infusion jams, when washing the equipment, being hit by galfalum iron when walking, falling on an object while working, falling on equipment when going home from work,



Figure 2. Personal Protective Equipment (PPE) for fire risk in Hospital X 2021

when going down stairs, caught fire while welding, falling when going down stairs after finishing work, getting crust, and exposed to cooking utensils while sliding.

In addition, the personal protective equipment against fire disaster did not have the mapping either, and the hospital only had helmets and fire extinguishers. The following is a picture of personal protective equipment related to fire risk.

Figure 2 shows that there is no Personal Protective Equipment (PPE) related to fires, so there is a need for mapping related to Personal Protective Equipment (PPE) for fire risks. It can be seen in the figure that there was only red, blue, and yellow helmets, with gas and light fire extinguishers installed.

These data indicate the need for mapping of Personal Protective Equipment (PPE) or equipment that will protect the user considering that Hospital has obtained Plenary Accreditation and is one of the type C hospitals with many patients. Class C Hospital must have at least four basic Specialist Medical Services and four Medical Support Specialist Services (Ministry of Health Republic of Indonesia, 2010).

At Hospital X, there are non-infectious hazards in the form of ergonomics where it is necessary to procure equipment that will protect the health workers in the form of Protective clothing, Gloves,

Masks, Head protectors, and Safety Shoes. A safe and healthy work environment is influenced by facilities for equipment that will protect the user, an ergonomic room and the use and storage of chemicals that must be handled properly. In addition, knowledge about the importance of Personal Protective Equipment (PPE) that complies with standards must also be better understood by officers, since it will affect the Occupational Safety and Health (Ikasari *et al.*, 2018).

According to previous research, the use of Personal Protective Equipment (PPE) also reduces skin symptom disorders. The results of the study mentioned various manifestations of facial itching, in which almost 30% of health workers complained certain skin rash or dermatitis associated with the use of equipment that will protect the user that complies with standards, which is also in line with the previously reported prevalence of contact dermatitis (31.5%) (Battista *et al.*, 2021).

DISCUSSION

Discussion Related to PPE Mapping Analysis at Hospital X

The results showed that H_0 was rejected, meaning that there was an effect of using Personal Protective Equipment (PPE) on the incidence of occupational accidents in the hospital. The majority of respondents, where the total of respondents was 179 respondents, have used PPE properly, thus they have never experienced a work accident, namely 141 respondents in the hospital (78.8%). In this case, the hypothesis testing results for the use of Personal Protective Equipment (PPE) variable obtained a significant value of $0.004 < 0.05$.

Therefore, it is necessary to stock up on Personal Protective Equipment. In the previous research, it was stated that a list of records and labeling of available Personal Protective Equipment supplies is needed so that the available Personal Protective Equipment is more controlled and maintained (Dwiastuti, Suroto and Kurniawan, 2018).

Previous research has also noted that healthcare workers should report when they find discomfort in wearing different designs and modifications of PPE that could affect the delivery of patient care and their

overall performance, such as bending, raising the arms, squatting, and walking. However, to a very rare degree they have validated the physiological changes that occur and affect the health and efficiency of workers (Arif *et al.*, 2021).

Another study related to Personal Protective Equipment (PPE) showed that among 261 staff questionnaires analyzed from 268 visits to 30 wards, there were 68% respondents who had contact with rescuers, with a sample of hundreds of staff using equipment that will protect the user during covid-19 between 20 April to 15 May 2020 (Castro-Sánchez *et al.*, 2021).

Several hospitals in Indonesia show the occurrence of nosocomial infections. These infections are in the forms of transmission via blood and body fluids that are media for transmission of disease from patients to health workers. In addition, virus are also the biggest threats to health workers. In this case, the hospitals that reported the events include Hasan Sadikin Hospital Bandung by 9.9%, Pirngadi Hospital Medan by 13.92%, Karyadi Hospital Semarang by 7.3%, Dr. Soetomo General Hospital Surabaya by 5.32%, and National Central General Hospital of Dr. Cipto Mangunkusumo by 5.4% (Zubaidah, Arifin and Jaya, 2019).

Hospital standards related to occupational safety and health have also been issued through the regulation concerning Hospital Occupational Health and Safety. Workers in hospitals have a higher risk than other industrial workers for the occurrence of Occupational Diseases and Work Accidents, thus more efforts are needed, one of which is the provision of personal protective equipment (Regulation of the Minister of Health of the Republic of Indonesia, 2016).

In order to prevent the spread of this infectious disease, it is necessary to have Personal Protective Equipment (PPE) which is proven to reduce the dangers and potential hazards due to its continuous and repeated application. In addition, the establishment of preventive measures along with reducing usage time, and avoiding overtime shifts are very important to ensure safe and secure working conditions for health workers (Battista *et al.*, 2021).

According to previous research, potential hazards in hospitals can be caused by biological factors (viruses, bacteria, fungi, parasites), chemical factors (antiseptic, regent, anesthetic gas), ergonomic

factors (wrong work environment, working method, and work position), and physical factors (temperature, light, noise, electricity, vibration and radiation), that can cause occupational diseases (Zahara, Effendi and Khairani, 2017).

The existence of this pandemic situation, causing an impact on service quality and productivity, that will not only affect physical but also mental health of health workers (Arifah, Rahmah and Diannita, 2021). Based on data released by the National Disaster Management Agency in July 2020, the use of equipment that will protect the user is very important, especially during the pandemic to have Personal Protective Equipment (PPE), which shows that there are twenty-six hospital clusters related to the corona virus (Gunawan and Chalidyanto, 2020).

Personal protective equipment has the benefit of reducing the risk of accidents at rooms, when working both indoors and outdoors. Meanwhile, disposing or not using Personal Protective Equipment (PPE) can increase the number of accident at work. Occupational Safety and Health Insurance is one way that can be done to provide protection for companies or agencies, so there must be efforts to provide adequate facilities, both machines, equipment, and equipment that can protect the user and people (Suwardi and Daryanto, 2017).

This is in line with research conducted at Pelita Insani Hospital, where there are 20 people who used PPE (41.67%) and 28 people who did not use PPE (58.33%). The condition where personal protective equipment (gloves and masks) are rarely used can cause potential disease transmission (Zubaidah, Arifin, and Jaya, 2019).

In this research, it was shown that Personal Protective Equipment (PPE) had an influence on the incidence of occupational accident. The use of Personal Protective Equipment (PPE) is needed to minimize occupational accident in hospitals. Thus, efforts are needed to maintain the Personal Protective Equipment (PPE) in the form of a head cover, mask of respirator, protective gown/clothes, surgical glasses, gloves, boots, masks, body masks, safety helmet, safety spectacles, rubber gloves, and cloth gloves, in order to create safety and health in the workplace.

Health conditions in various parts of the world highly recommend the use of Personal Protective Equipment (PPE), especially for those needed

and where risks exist. In this case, the equipment must comply with the standards and according to needs.

In this case, the Italian state provides a policy that it is mandatory to use Personal Protective Equipment (PPE) outdoors and indoors. Health workers, staff, and officers who are in high-risk environments in hospitals such as operating rooms, emergency rooms, Intensive Care Unit (ICU) rooms, isolation rooms, all rooms, and general medical wards are required to wear equipment that will protect the user. This is to prevent the spread of disease and viruses (Battista *et al.*, 2021)

CONCLUSION

There are incidents of work accidents in the form of infectious and non-infectious which require control in the form of procurement of Personal Protective Equipment (PPE). In this case, mapping of the PPE is needed. Based on the analysis that has been done and the hospital's secondary data obtained related to the incidence of work accidents and PPE facilities owned by the hospital, PPE mapping is needed. These PPE include the surgical gown, aprons, masks, face shields, head protection, protective clothing, safety helmets, protective clothing, safety shoes, body armor, fire-resistant clothing, fire-resistant helmet, fire-resistant goggles, and fire-resistant gloves that will protect health workers in Hospital X.

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