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Original Research

A Qualitative Study on the Management of Personal Protective Equipment (PPE) During the COVID-19 Pandemic

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Abstract

Based on a preliminary study, the COVID-19 PPE at Rawang Primary Health Care (PHC) was only partially available. The purpose of this research was to analyze the management of COVID-19 personal protective equipment (PPE) for Rawang PHC officers in Padang City. This research was a qualitative study held in July-September 2021 at the Rawang PHC. Research informants were four officers of PHC, who were obtained through purposive sampling. Collecting data was done through in-depth interviews, document reviews, and observation—data analysis using content analysis with source and method triangulation. The results of this study show that planning for needs was carried out using the consumption method; requests for COVID-19 PPE were made to the Padang District Health Office, which can be done at any time. Receipt of PPE COVID-19 by recording and checking the amount of PPE on the stock card. PPE storage using the FIFO method. The destruction of PPE was only done at the beginning of the pandemic. The distribution of PPE was carried out in sub-units and PHC networks. Control carried out related to the supply and use of PPE. The recording and reporting of PPE have been carried out, but the evaluation has yet to be carried out because the PHC still needs to have a Standard Operating Procedure (SOP) for managing COVID-19 PPE. The management of COVID-19 PPE at the Rawang PHC could be more optimal. It is recommended for Rawang PHC to make a SOP for the management of COVID-19 PPE.

Keywords: COVID-19, Primary Health Care Management, Personal Protective Equipment

INTRODUCTION

Coronavirus Disease 2019 (COVID-19) is an infectious disease that caused by the SARS-CoV2 virus with most cases experiencing respiratory disease (Decree of the Minister of Health of Indonesia, 2020). The situation of the spread of COVID-19 has reached almost all over the world, with the number of cases continuing to increase. Until March 17, 2021, more than 120 million people had contracted COVID-19, with a total of deaths reached 2.6 million people (WHO, 2021). The number of cases in Indonesia until March 14, 2021, reached 1.4 million people, with a total death toll of 38 thousand people (2.7%) (Ministry of Health of Republic of Indonesia, 2021).

According to Belingheri (2020), health workers have a higher risk of contracting COVID-19. This is because health workers have close contact with patients. According to Kim (2021), officer health puts the risk of COVID-19 associated with close contact with COVID -19 cases both inside and outside the workplace, but health workers are more potentially infected due to exposure to COVID-19 patients during shift work. Based on data compiled by the Association of Health Professional Organizations in Indonesia, as of September 2020, there were 6,680 health workers infected with COVID-19. Of these cases, 234 health workers died (Widadio, 2020).

COVID-19 requirements require that health workers use personal protective equipment (PPE) such as masks, gowns, gloves, and eye protection (WHO, 2020). PPE is a set of tools designed to prevent the entry of substances, solid, liquid, or air particles, to protect the wearer from injury or the spread of infection or disease. PPE that is used properly can be a barrier to the entry of viruses and bacteria through the skin, mouth, nose, or eyes (mucous membranes) of health workers and patients (Ministry of Health of Republic of Indonesia, 2019). The type of PPE used varies depending on the situation, type of workforce, and activities (WHO, 2020).

The number of COVID-19 cases in West Sumatra Province until March 17, 2021, reached 30 thousand people, with deaths reaching 679 people (SumbarProv, 2021). The city of Padang is the city with the highest COVID-19 cases in West Sumatra with the number of cases reaching 15 thousand people (Padang District Health Office, 2021). According to IDI, until September 2020, there were 60 doctors infected with COVID-19 in West Sumatra (Arrazzi, 2020). Based on the initial study conducted by researchers all over primary health cares (PHC) in Padang City, Rawang PHC is one of the PHC with the highest lack of PPE availability, which is 3 out of 4 officers primary health care stating PPE COVID-19 not available with complete at the Rawang PHC.

Results of the study by Najooan et al., (2019) show that management preparation pharmacy at Bitung Primary Health Care West was already conducted with good results, but the source power human in section pharmacy of primary health care still not enough and that thing often makes available energy overwhelmed in the process of that management. According to Wahyuni et al., (2021) activities management preparation pharmacy and ingredient medical finished use at the Landasan Ulin Health Care not yet everything in accordance with guidelines, namely the Pharmacy SOP at the Primary Health Care and Instruction Technical Standard Service Pharmacy at the Primary Health Care Ministry of Health of Indonesia in 2019.

Destination study this is for analyze management of personal protective equipment (PPE) at the Rawang PHC, Padang City, 2021. Assessed aspect of the use stages management of medical consumables based on to Regulation of the Ministry of Health of the Republic of Indonesia No. 74 of 2016, include planning requirement, request, receipt, storage, distribution, control, record and reporting, and monitoring and evaluation management. This research could

provide information needed in management of PPE for COVID-19 prevention at the Rawang PHC.

METHODS

Design studies use the qualitative method. Location research at Rawang PHC, Padang City, was held from May to August 2021. The informants study selected four people using the method of purposive sampling: one head of primary health care, one inventory goods officer, and two health officers at Rawang PHC.

Data collection using in depth interviews, observations, and document review. Plot data processing as follows: 1) data reduction, 2) data presentation, 3) withdrawal conclusion / verification. Data analysis using analysis contents with method validation that is triangulation source and triangulation method.

RESULTS

Characteristics informant on in-depth interview is as following:

Tabel 1. Characteristic of Informant

Code	Sex	Age (yo)	Education	Position
Inf-1	Woman	43	Bachelor of Medicine	Head of PHC
Inf-2	Woman	37	D3 Midwifery	Inventory Goods
Inf-3	Woman	31	S1 Midwifery	Midwife
Inf-4	Woman	29	D3 Nursing	Nurse

Data source: Primer data

Planning PPE Needs

Based on the results of research, PPE planning has been carried out since the beginning of the COVID-19 pandemic by pharmacy officers. The data needed in PPE planning is a list of needs PPE (mask, handsoon, face shield, hazmat suit, gown), last year's PPE use data, total stock per month, as well as the number of cases. This is in accordance with what was delivered by the informant following.

"Based on the need for PPE, for example, the stock is monthly and depending on the case, if there are indeed many patients who are positive, then many PPE are also asked for. If you ask for it whenever you can, ask the DKK according to your request and it will be given immediately" (Inf-1)

"Yes, based on needs data .. just look at last year roughly, usually the pharmacist is the one who counts." (Inf-2)

Based on the results of an in-depth interview and observation, it was concluded that the method of determining the amount of PPE at the Rawang PHC is consumption. Planning the need for PPE at the Rawang PHC uses bottom-up planning. The results were then proposed to Padang District Health Office and analyzed in accordance with budget finance and the amount of PPE stock in the office.

PPE Request

Based on an in-depth interview, PPE requests are made by program holders, drug warehouses, and assets with an attached report of existing PPE stock. The report was delivered to the head of Rawang PHC, and after that, the staff made a request for PPE as needed at the primary health care. like the results of in-depth interviews following:

"We ask for the gift from the Primary Health Office to use a request letter according to the need for PPE at the Primary health Care, after that we will pick it up ourselves, so it's fast" (Inf-1)

"So we asked for PPE to be given from the Primary health office .." (Inf-2)

Based on observation and document review, besides submit request to Padang District Health Office, COVID-19 PPE was also obtained from giving from entrepreneurs, community donations, members of the legislative body, etc. The PPE is received by the primary health care system, as evidenced by the handover document. PPE received by the primary health care system is given to the asset. Furthermore, assets that manage PPE and make reports that will be given to the Padang District Health Office.

PPE Admission

Based on an in-depth interview, all PPE are received by Rawang PHC officers accompanied by proof of handover. Some of the PPE is handed over to the assets, and some of the PPE is handed over to the pharmacy (types of PPE masks and handsoons). PPE recording or reporting is carried out by part of the asset. As the following interview excerpt shows:

"The PPE that we take from the DKK or all donations given to the Primary health Care are collected and handed over to assets. There will be a handover report later on the assets that manage ... " (Inf-1)

"The goods from DKK are checked by the new receiving team to the asset room." (Inf-2)

"... Goods arrive at the pharmacy first, some in the pharmacy, some in the asset room, the name is like the handsoon mask at the pharmacy, but like hazmat clothes , the shoes are in the asset room ." (Inf-3)

" Usually the head of Primary health Care that received and handed over to the asset, later if it was stored at the pharmacy, it was handed over to the pharmacy (masks, handsoon) but the records remained in the assets. Do coordinate ... it will be reported to the assets." (Inf-4)

Based on observation and document review, taking goods to the Padang District Health Office is accompanied by a letter of reply from the Padang District Health Office to Rawang PHC. All PPE that reaches Rawang PHC is checked by the beneficiary and assigned to the asset. After that, the goods are stored in the asset room based on their suitability. Based on the in-depth interview result, the amount of PPE received from the Padang District Health Office depends on the availability of stock and the needs of every primary health care facility in Padang city.

PPE Storage

Based on an in-depth interview, PPE is stored and arranged in a special room (the asset room), which has a wardrobe per item. An officer of the asset section records every entry and exit of PPE on a stock card. As the following interview results show:

"There is a special room (assets) and the method of spending is of course recorded, today who wants to take clothes, handsoon is recorded with assets." (Inf-1)

"This is the room, the storage is arranged, there is room, there is a wardrobe per item... goods have been purchased, have been checked with the recipient, then stored in the asset room." (Inf-2)

Based on observation, the PPE storage is located in a room next to the administration room. The size of the room is the same as the other examination rooms at Rawang PHC. To ensure security, the asset room is locked or closed. After an in-depth interview, observation, and document review, Rawang PHC applied the FIFO (First In, First Out) system in the process of storing PPE in the room assets.

PPE distribution

Based on an in-depth interview, COVID-19 PPE at Rawang PHC is distributed to sub-units at the primary health care network of Rawang PHC. PPE is provided to officers in need in various activities such as referring patients, swabs, vaccines, field trips, posyandu, and for services. This can be seen from the following interview results:

"Friends who carry out any activities, such as referring patients, swab , vaccines, going to the field, integrated healthcare Care. . ." (Inf-1)

"All officers in need." (Inf-2)

"For officers in service, refer Covid patients or for tracking . ." (Inf-3)

"For swabs ... For vaccines ... For daily services" (Inf-4)

Based on the in-depth interview, Rawang PHC officers will report and ask for PPE directly to the asset officers. The asset officer prepares the required PPE in accordance with these activities and records every item or PPE that comes out on the control card or stock card. In addition, officers can also ask for PPE, such as masks and gloves, at pharmacies. Based on document review, there was no shortage of PPE stocks, but at the beginning of the COVID-19 pandemic, there was a shortage of PPE stocks such as masks.

PPE destruction

Based on an in-depth interview, reusable PPE like googles, face shields, and dan boots, after use, will be washed or sterilized by officers, then stored in assets and can be used again. As the following interview results show:

"If it can still be used, after it is used it is sterilized again, of course there are officers who sterilize it (usually cleaning service / CS) is in accordance with the SOP, we usually use soapy water, soak it, dry it." (Inf-1)

"Immediately after being used, it was immediately washed, there was a CS officer who washed/sterilized . (Inf-2)

Meanwhile, disposable PPE such as hazmat clothes, masks, and gloves are disposed of in medical waste. Rawang PHC cooperates with third parties to manage the medical waste. Based on an in-depth interview and document review, there was no destruction of PPE, but at the beginning of the COVID-19 pandemic, the destruction of PPE such as masks and hazmat clothes was carried out by burning them in a barrel located in front of the primary health care facility. This activity is carried out because of the policy of the Padang District Health Office to reduce the accumulation of medical waste.

PPE Control

Based on an in-depth interview, the asset section officer controls PPE inventory by recording income and dispensing of PPE on the stock card. Environment and health officer in charge of medical waste management and extermination. Officer surveillance to control the adequacy of the PPE used for field activities and see the suitability of the PPE standards used. This can be seen from the following interview results:

" ..a set: the main thing, in and out of goods, sling: waste control." (Inf-1)

" .. asset person, the culling section of the environmental health." (Inf-2)

"The asset section that oversees the entry and exit of goods, how much is the remaining stock. . ." (Inf-3)

"Assets: goods in and out. Environmental health : disposed of in its place or not, according to or not , infectious and non- infectious according to the place or not . Surveillance : monitoring whether or not the equipment used to go out to the field is sufficient or not, according to the standards that are used by friends to go out in the field." (Inf-4)

Besides the use of PPE, to prevent COVID-19 transmission at Rawang PHC, the sterilization of the room is carried out even though it is not routine. Based on observation, Rawang PHC was providing hand sanitizer in every room, providing sinks, and creating a barrier between the staff and the patient. However, based on the results of the research, there is no control over the use of and handling of PPE.

Recording and Reporting

Based on an in-depth interview, recording the amount and type of PPE that comes in and goes out from Rawang PHC was conducted by asset and pharmacy officers through card stock. Recap recording the will reported every month by the Head of Primary Health Care to the Padang District Health Office. This can be seen from the following interview results:

"The goods that have been taken are immediately given to the assets, and the DKK reply letter was given to the assets to be their report. Assets record the expenses, later the report will also record assets that record how much is left, how much is in stock." (Inf-1)

"The goods that have arrived, are received, have been checked by the recipient, stored in the asset room, later based on needs, they will be issued again. The issuing card will be made later." (Inf-2)

Card stock is used as proof of PPE production, evidence of receipt of PPE, evidence of use of PPE in primary health care, and as an order letter or request from primary health care to the Padang Primary Health Office. Based on observation, the record on the stock card was not filled in completely. Based on the document review, it was found that the stock cards had no stock number, packaging type, location, expiration date, maximum inventory limit, estimated usage per month, control schedule, or buffer stock.

Monitoring and Evaluation

Based on the in-depth interview, monitoring and evaluation of PPE management in Rawang PHC have not yet been accomplished. This is demonstrated by the fact that there are no existing standards and guidelines evaluation in form instruction technical and SOPs made by Rawang PHC such as results in depth interview the following:

"No, there should be an SOP. There are actually but, we work according to the SOP." (Inf-1)

"None" (Inf-2)

"There is but it's not a manual, but what is it called, like in the past it was from the Primary health office for level 1 Primary health Cares, only PPE is used, for level 2 hospitals these are used." (Inf-3)

"Actually, there is, but with whom, maybe there is surveillance , those related to Covid , there must be PPE , right." (Inf-4).

DISCUSSIONS

Planning needs PPE has been carried out since the beginning of the COVID-19 pandemic, namely in 2020, by pharmacy officers. The data needed in PPE planning is a list of needs PPE (mask, handsocon, face shield, hazmat suit, gown), last year's PPE use data, total stock per month, as well as the number of cases. This results in line with Najoan et al., (2019) preparation pharmacy planning needs done by West Bitung Primary Health Care which is to estimate needs and consider use pharmacy preparation before.

According to Regulation of the Minister of Health of the Republic of Indonesia Number 74 of 2016, planning ingredient medical finished use at the Primary Health Care every period held by the Pharmacy Room at the Primary Health Care Selection process, preparation, pharmacy, and ingredient Finished Use conducted with consideration of pattern disease, pattern consumption in the period before, mutation data of preparation pharmacy, and plan development (Kementerian Kesehatan RI, 2016).

The method of determining the amount of PPE at the Rawang PHC is the consumption method. In line with study by Fathiyah (2018), the method used in activity planning for drug and medical consumables is to consider pattern consumption or usage drug a year before. Sulistyorini (2016) said that consumption method shows an overview of the number of types and quantities of drugs used by all certain service units to treat disease cases over a certain period of time, for example once a year. This method can be used effectively if data on drug use from year to year is available in full and consumption in service units is constant and does not fluctuate.

Planning the need for PPE at the Rawang PHC uses bottom-up planning. The results were then proposed to the Padang District Health Office to be analyzed in accordance with budget finance and the amount of PPE stock in the Padang District Health Office. This is in accordance with Regulation of the Minister of Health of the Republic of Indonesia Number 74 of 2016, where the planning process needs preparation pharmacy per year conducted by tiered (bottom-up).

PPE requests are made by program holders, drug warehouses, and assets with an attached report of existing PPE stock. The report is delivered to the head of Rawang PHC, and after that, Rawang PHC makes a request for PPE as needed at the PHC. A request for PPE was submitted to the Padang District Health Office, according to the provisional government area (Kementerian Kesehatan RI, 2016). Najoan et al., (2019) West Bitung Primary Health Care conducts the request process preparation pharmacy conducted by the head warehouse drug based on the report usage and sheet request drugs submitted to the pharmacy warehouse of the Bitung District Health Office.

Besides submitting requests to the Padang District Health Office, COVID-19 PPE was also obtained through giving from entrepreneurs, community donations, members of the legislative body, etc. The PPE was received by the Rawang PHC, as evidenced by the handover document. PPE received by the Rawang PHC is given to the asset. Furthermore, assets that manage PPE and make reports that will be given to the Padang District Health Office.

According to Erviana et al., (2021), the district health office becomes the main source of procurement of preparation pharmacy and medical consumables at the usual primary health care, as submitted by the head of primary health care to the head of district health office in his or her territory. Besides that, procurement of drugs can also be conducted by independents, with the condition that it must be in accordance with legislation if pressed when out of stock of drugs.

All PPE originates from the Padang District Health Office; donations from companies, associations of organizations, and others are received by Rawang PHC officers accompanied by proof of handover. After that, some of the PPE is handed over to the assets and some of the PPE to the pharmacy (types of PPE: masks and handsoons). PPE recording or reporting is carried out by Part Asset.

Taking goods to the Padang District Health Office is accompanied by a letter of reply from the Padang District Health Office. All PPE that reaches the Rawang PHC is checked by the beneficiary and assigned to the asset. After that, the goods are stored in the asset room based on their suitability. This is in accordance with the study of Erviana et al., (2021). In receiving activities of preparation pharmacy and medical consumables, the officer in charge of warehouse pharmacy is required to do checking to hand over medicine in accordance with the Usage Report and Drug Requisition Sheet (LPLPO) document or in accordance with a request before. The checking cover type, quantity, and expired date. This is conducted for guard availability preparation in pharmacy (Ministry of Health of Republic of Indonesia, 2019).

The amount of PPE received from the Padang District Health Office depends on the availability of stock and the needs of every primary health care in the Padang city. This is in line with study Najooan et al., (2019) In the process of admission, pharmacy preparation was not always received in accordance with quantity preparation proposed pharmacy by Primary Health Care. It caused by a lot of request from Primary Health Care in Bitung City and the lack of availability of preparation pharmacy quantity in warehouse of District Health Office.

PPE is stored and arranged in a special room (asset room) which has a wardrobe per item. Officer of the asset section records every entry and exit of PPE on a stock card. The PPE storage location is located in a room next to administration room, making it easier for officers to request PPE to parts asset. The size of the room is the same as the other examination rooms at Rawang PHC. For ensure security, the asset room is locked/closed.

Rawang PHC applies the FIFO (First In First Out) system in the process of storing PPE in the room assets. This thing different with study Lutsina & Lette, (2021), at Primary Health Care in Kupang City, which implements FIFO and FEFO (First Expired First Out) systems in pharmacy storage preparation. This is because previous studies drugs were storage that had an expiration date, while this study only examined PPE that had a relatively long expiration date.

COVID-19 PPE at Rawang PHC is distributed to sub-units and network of Rawang PHC. PPE provided to officers in need in various activities such as referring patients, swabs, vaccines, field trips, integrated service post, and for services. This is in line with study of Wahyuni et al., (2021) that distribution preparation pharmacy is done in Landasan Ulin Primary Health Care and is conducted to subunits and network health cares, such as auxiliary health care, integrated healthcare care, etc. According to Regulation of the Minister of Health of the Republic of Indonesia Number 74 of 2016, distribution conducted to sub unit and to primary health care network.

Rawang PHC officers will report and ask for PPE to the asset officer directly. The asset officer prepares the required PPE in accordance with these activities and records every item or PPE that comes out on the control card or stock card. In addition, officers can also ask for PPE such as masks and handsoons at pharmacies. According to Wahyuni et al., (2021) every distribution must be accompanied by equipment document in order to ensure good administration. At the beginning of the COVID-19, pandemic there was a shortage of PPE stocks such as mask. In line with the study by Halcomb, et al., (2020), there is emptiness in

the stock of PPE in primary health care at the moment COVID-19 pandemic occur in Australia.

Reusable PPE like goggles, face shield, dan boots, after use will be washed/ sterilized by officers, then stored in assets and can be used again. This thing in line with Study Alayyannur & Nilamsari, (2017) reusable PPE already worn by officer, washed by laundry party suitable with existing standards.

Meanwhile, disposable PPE such as hazmat clothes, masks, and handscoon are disposed of in medical waste. Rawang PHC cooperate with third parties to manage the medical waste. There was no destruction of PPE, but at the beginning of the COVID-19 pandemic, the destruction of PPE such as masks and hazmat clothes was carried out by burning them in a barrel located in front of the Rawang PHC office. This activity is carried out because of the policy of Padang District Health Office to reduce accumulation medical waste.

Extermination is conducted for pharmacy preparation and medical consumables when the product does not fulfill the quality requirements quality or has expired. Did not fulfill the condition for use in health service, permission to circulation was revoked. (Kementerian Kesehatan RI, 2016)

Control is something that is done to ensure the achievement of the desired target in accordance with strategy and programs that have been set with destination that does not occur emptiness in PPE stock. According to Regulation of the Minister of Health RI 74/2016, Control, consist of: control inventory, control usage, and handling. The asset section officer controls PPE inventory by recording income and dispensing PPE on the stock card. Environment health officer in charge of medical waste management and extermination. Officer surveillance is used to control the adequacy of the PPE used for field activities and see the suitability of the PPE standards used. This is in line with Ramadhan (2020), when logistics control at primary health care is conducted by making card inventory room and card inventory goods. Wahyuni et al., (2021) On the control process every average usage per month must be calculated, as well as optimum stock, stock safety, and waiting time, so that there is no emptiness of medicine.

Recording the amount and type of PPE that comes in and goes out from primary health care is conducted by the officer, part asset, and pharmacy through card stock. Recap recording will be reported every month by the Head of Rawang PHC to the Padang District Health Office.

Card stock is used as proof PPE production, evidence receipt of PPE, evidence use of PPE in primary health cares and as an order letter or request from primary health care to the Padang Primary Health Office. This is in line with the study by Erviana et al., (2021), where facilities used in reporting and recording are card stock, a report of usage, and request medicine sheet. According to Najoan et al., (2019) West Bitung Primary Health Care records and reports past stock medicine, record enter and exit medicine, and reports usage and requests medicine sheet recorded every day and every month for reported to Primary Health Office.

Administration covers recording and reporting to the whole suite activity in management preparation pharmacy, and medical consumables, Pharmacy preparation and medical consumables are received, stored, distributed, and used in primary health cares or other service unit. The aim of recording and reporting are: 1) proof that management of Pharmacy preparation and medical consumable has been done; 2) a source of data for setting and control settings; and 3) a source of data for making report (Kementerian Kesehatan RI, 2016).

Monitoring and evaluation of PPE management in Rawang PHC have not yet been accomplished. This is proven by the fact there are no standards and guidelines for evaluation in form of instruction technical and SOPs made by Primary health Care. These results are in line with results of Ramadhan (2020) research, Primary health care of Boja II does not have regulation specially made alone by primary health care party.

Monitoring and evaluation are performed on a regular basis with the following goals in mind: 1) control and avoid errors in medical consumable management; 2) repair through continuous medical consumable management; 3) evaluate performance management achievements; and 4) every activity of medical consumable management must be held in accordance with standard operational procedures. SOP set by the head of primary health care, then put in an easy-to-see place (Regulation of the Minister of Health of the Republic of Indonesia Number 74 of 2016).

CONCLUSIONS

PPE management to prevent COVID-19 at Rawang PHC is not optimal. This was shown by the fact that there is not yet a standard or set guidelines for evaluating PPE management in primary health care. It is recommended to Rawang PHC to make instructions and an approved Standard Operational Procedure (SOP) by the head of primary health care and put them in an easily visible place.

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