Descriptive study of behavior in using Personal Protective Equipment (PPE) to prevent Covid-19 for primary health care officers in Padang City

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Abstract. The number of positive patients infected by Coronavirus Disease 2019 (Covid-19) in the city of Padang continues to increase and is highest in West Sumatra Province. Until May 5, 2020, there were 131 positive confirmed cases. Six of them are primary health care officers. The purpose of this study was to measure the description of the use of Personal Protective Equipment (PPE) in the prevention of Covid-19 in primary health care staff in Padang City. This research uses descriptive quantitative method which was carried out in March - June 2020 in Padang City primary health cares. The study population are primary health care officers who deal with patients directly in the city of Padang with a sample of 100 people. Data were collected using a questionnaire and analyzed univariately. The results showed that 55% of staff used incomplete PPE, 57% are old, 54% have low knowledge, 54% have negative attitudes, 46% PPE are not available at the primary health care, and 45% lacked leadership support. The results also noted that 58% of officers began using PPE when announcing the first positive case in Padang City. For further research can conduct bivariate analysis and qualitative research for in-depth analysis.

1. Introduction
Coronavirus disease 2019 (Covid-19) is an infectious disease caused by a new type of virus (Sars-CoV-2) that has never been identified before in humans. This virus was first discovered from Wuhan, China. It was discovered at the end of December 2019 and has infected 213 countries as of 30 April 2020 [1]. Common signs and symptoms of Covid-19 infection include symptoms of acute respiratory disorders such as fever, coughing, and shortness of breath. The average incubation period is 5-6 days with the longest incubation period of 14 days. In severe cases of Covid-19 can cause pneumonia, acute respiratory syndrome, kidney failure, and even death [2].
World Health Organization (WHO) official report as of 30 April, 2020, more than 3 million of people confirmed by Covid-19 with a death toll of 217 thousand of people. High level of spread of this virus, the
WHO sets Covid-19 as a pandemic on March 11, 2020 [3]. Indonesia reported the first Covid-19 confirmation cases which were 2 cases on March 2, 2020. According to data from the Task Force for the acceleration of handling of Covid-19 Indonesia, the number of cases as of April 30 were 10 thousand more cases with 792 peoples (7.8%). West Sumatra has the most positive Covid-19 positive cases on the island of Sumatra and number 10 at the national level as of May 5, 2020 [4]. West Sumatra reported the first 5 confirmed Covid-19 cases on March 26, 2020. According to data from the West Sumatra Health Office the number of cases as of April 30, 2020 has reached 148 people with 15 deaths. The city of Padang is the city with the most positive cases, namely 99 people spread in almost all districts in the city of Padang [5].

Based on scientific evidence, Covid-19 can be transmitted from human to human through coughing / sneezing (droplet), not through the air. The people who are most at risk of contracting this disease are people who are in close contact with Covid-19 patients, including those who treat patients in this case health workers. Health workers have a high risk of exposure. This is evidenced by the number of health workers who have tested positive for Covid-19 [2]. There were 174 health workers who were positive exposed to Covid-19 in Jakarta as of April 11, 2020. A spokesman for the Indonesian Doctors Association (IDI) said there were about 47 health workers who died from Covid-19 in Indonesia [6]. Based on a network analysis of positive patient contact history in West Sumatra Province, it was found that 19.83% of patients had contact with health workers [7]. As of 30 April 2020 there were around 20 health workers who were positive in Covid-19 in West Sumatra Province. Six of them are primary health care staff in Padang City who consist of four Pegambiran primary health care officers and two Andalas primary health care officers [8].

Efforts to prevent health workers from being infected with Covid-19 are by complying with infection prevention and control practices, which include administrative, environmental and engineering controls and proper use of Personal Protective Equipment (PPE). PPE acts as a barrier between infectious material (for example viruses and bacteria) and the skin, mouth, nose, or eyes (mucous membranes) of a patient's health care worker [9]. The minimum PPE for health workers who treat patients directly when Covid-19 is a surgical mask, gown, gloves, goggles, face shield, head protectors and protective shoes [10]. Based on research conducted by Ningsih, N (2018) it is known that 41% of respondents have good knowledge about PPE, 39.8% have a good attitude, 51.8% do not have sufficient PPE availability, and 57.8% have a policy about the use of PPE [11]. Based on research conducted by Khairunnisak P (2017), it is known that 54.6% have appropriate PPE usage behavior, 61.9% have high work motivation, 68% availability of sufficient PPE, and 58.8% SOP is not implemented [12]. Based on Atmanto's research, IS (2011) to metal casting industry workers, most respondents will work without using PPE because there is no support or attention from the leadership [13].

Based on a preliminary study of primary health care staff in Padang city, it was found that inconsistencies of staff in using PPE. Two out of ten officers sometimes use PPE when on duty at the primary health cares. The use of PPE is very important for health center staff to prevent and reduce the risk of exposure to Covid-19 from the community, both those that have been confirmed and those that have not. Therefore, researchers are interested in measuring the behavioral description of the use of Personal Protective Equipment (PPE) in preventing Covid-19 among primary health care officers in Padang City in 2020.

2. Research methods
This research is a descriptive quantitative research. This research was conducted in March-June 2020 in 12 primary health cares in Padang city. The population in this study were primary health care officers who handled Covid-19 patients directly, namely doctors, dentists, midwives and nurses in Padang city, totaling 850 people. The sample size in this study was obtained using Slovin theory and coupled with a 10%
dropout of 100 officers. The inclusion criteria were officers who were willing to fill out the questionnaire and were not on leave since the first Covid-19 case in Padang city. While the exclusion criteria are officers who are not willing to be respondents. Primary data collection used a questionnaire that has been tested for its validity and reliability before.

3. Results and discussion

3.1 Characteristics of respondents

| Characteristics of Respondents | Frequency (n) | Percentage (%) |
|-------------------------------|--------------|----------------|
| Sex                           |              |                |
| Male                          | 10           | 10.0           |
| Female                        | 90           | 90.0           |
| Last Education                |              |                |
| Associate Degree              | 53           | 53.0           |
| Bachelor                      | 44           | 44.0           |
| Others                        | 3            | 3.0            |
| Profession                    |              |                |
| Doctor                        | 25           | 25.0           |
| Dentist                       | 7            | 7.0            |
| Midwife                       | 29           | 29.0           |
| Nurse                         | 25           | 25.0           |
| Others                        | 14           | 14.0           |
| Start Using Covid-19 PPE     |              |                |
| Announcement of the first positive case in Indonesia | 33 | 33.0 |
| Announcement of the first positive case in Padang city | 58 | 58.0 |
| ‘PSBB’ enforcement in Padang City | 4 | 4.0 |
| Others                        | 5            | 5.0            |
| Total                         | 100          | 100.0          |

Based on table 1 it can be seen that the number of respondents in this study was 100 people. Almost all female respondents with a percentage of 90%. For the last education group, the most respondents had educational background of Associate Degree of 53%. Most respondents work as midwives, which is 29%. The highest frequency of respondents started complete Covid-19 PPE (surgical masks, gloves, headgear, gown, face shield, eye protection, and protective shoes) (58%) started since the announcement of the first positive case in Padang City (March 26, 2020).

3.2 PPE usage behavior

Table 2 shows that more than half of respondents used incomplete PPE when handling patients with a percentage of 55%. This is in line with Lakshmi A's research (2018) that only 18.1% use the correct PPE when working outside the Operating Room and ICU, this means that 81.9% do not use a proper or complete PPE [14]. According to the Ministry of Health (2020) personal protective equipment is a device designed as a barrier against the penetration of substances, solid particles, liquid, or air to protect health
workers from injury or spread of infection or disease [2]. According to the OSHA (Occupational Safety and Health Administration), personal protective equipment is a device used to protect workers from injury or disease caused by contact with hazards at work, whether chemical, biological, radiation, physical, electrical, mechanical and others.

| Behaviour     | Frequency (n) | Percentage (n) |
|---------------|---------------|----------------|
| Not complete  | 55            | 55.0           |
| Complete      | 45            | 45.0           |

The minimum PPE for health workers who treat patients directly is surgical masks, gowns, gloves, goggles, face shields, head protectors and protective shoes [10]. Based on the results of the study, the results of the use of PPE on public health center officers are shown in the table below.

| Personal Protective Equipment (PPE) | Yes (%) | No (%) | Sometimes (%) |
|-------------------------------------|---------|--------|---------------|
| Surgical Mask                       | 99.0    | 0.0    | 1.0           |
| Glove                               | 94.0    | 2.0    | 4.0           |
| Gown                                | 88.0    | 2.0    | 10.0          |
| Head Protector                      | 66.0    | 12.0   | 22.0          |
| Eye Protector                       | 51.0    | 28.0   | 21.0          |
| Face Shield                         | 86.0    | 2.0    | 12.0          |
| Protective Shoes                    | 20.0    | 49.0   | 31.0          |

Most of the officers (76%) have used PPE properly according to the minimum PPE that must be used in public health center in carrying out patient care. PPE that is often used by officers is surgical masks (99%), gloves (94%), gowns (88%), and face shields (86%). Whereas PPE that is rarely used is head protectors (66%), goggles (51%) and protective shoes (20%). This is because PPE head protectors, goggles and protective shoes are not sufficiently available at primary health cares.

3.3 Age

| Age         | Frequency (n) | Percentage (n) |
|-------------|---------------|----------------|
| Young (≥35 years) | 43            | 43.0           |
| Old (>35 years)   | 57            | 57.0           |

Table 3 shows that almost half of the respondents (43%) were young (≥35 years). The young category is officers who are less than 35 years old while the old category is officers who are more than 35 years old. The more age someone has, the level of ability and strength of a person will be more mature in thinking and working. Someone who is more mature has a tendency to be more trusted than someone who has not yet reached the level of maturity. This is as a result of the experience of the maturity of his soul. If related to age with PPE usage behavior, the more age, the more experience that someone will have and the
more information obtained and the better understanding of prevention efforts from the dangers posed by not using PPE. According to Elvadiana (2013), age can be a determinant of adherence to the use of PPE, the higher the age of officers, the more they will follow the standards for using PPE [15].

3.4 Knowledge

| Knowledge | Frequency (n) | Percentage (%) |
|-----------|---------------|----------------|
| Low       | 54            | 54.0           |
| High      | 46            | 46.0           |

Based on table 5 it is known that more than half of respondents (54%) have a low level of knowledge about PPE. This study is in line with research by Zaki, M, et al (2018) to nurses at Dr. RM. Pratomo Hospital which shows that 35 out of 57 respondents have low knowledge about PPE [16]. Knowledge is the result of human sensing or the result of knowing someone about an object through their senses, including the sense of sight, heard, smell, and touch [17]. Knowledge or cognitive is a very important domain in shaping one's actions (overt behavior). Knowledge is the result of individual observations and experiences of a new thing that can be useful for the individual [18]. Based on research conducted by Schwartz D (2014) in Israel, it was found that health workers who have high knowledge about PPE will help to increase the use of PPE properly while on duty [19]. Based on the results of the study, more than half of respondents (55%) answered incorrect questions regarding the steps to remove PPE and almost half the respondents (36%) answered incorrect on questions about the definition of PPE dress and the minimal PPE that must be used at the primary health cares (26%).

3.5 Attitude

| Attitude | Frequency (n) | Percentage (%) |
|----------|---------------|----------------|
| Negative | 54            | 54.0           |
| Positive | 46            | 46.0           |

Based on table 6 above, it is known that more than half (54%) of respondents have negative attitudes towards the use of PPE. Officers who have negative attitudes are those who do not support or do not agree with the complete use of PPE. This study is in line with research by Zubaidah T, et al (2015) which shows that more than half of respondents (53.3%) have negative attitudes about PPE [20]. Attitude is a response to certain stimuli or objects that involve a person's emotional factors. Attitude consists of 3 components, namely belief in objects, emotional life, and a tendency to act. According to Azwar (S) attitude is the awareness, experience and initial belief of the individual so it is difficult to change it. The formation of attitudes is influenced by many factors including perception and the environment [18]. Based on the results of the study a small proportion of respondents (29%) agreed that they were uncomfortable when using the complete PPE. A small proportion of respondents (13%) disagreed about sanctions if they did not use the full PPE when working.
3.6 The availability of PPE in primary health cares

Table 7. Frequency distribution based on the availability in primary health cares

| The Availability of PPE | Frequency (n) | Percentage (%) |
|-------------------------|--------------|----------------|
| Not available           | 46           | 46.0           |
| Available               | 54           | 54.0           |

Based on table 7 it is known that almost half (46%) of respondents stated that PPE is not available at the primary health cares. This is in line with Ningsih H's research (2018) about factors related to the use of PPE for nurses in the District Hospital of Mamuju, West Sulawesi, where more than half of the respondents (51.8%) stated that PPE are not available in hospitals [11]. The use of personal protective equipment in controlling occupational safety and health risks is very important, especially with regard to biological hazards with the highest risk of occurring, so that the use of PPE becomes a major procedure in the process of health care. The minimum types of PPE that are used by health center staff when handling patients directly are surgical masks, gowns, gloves, goggles, face shields, head protectors, and protective shoes [9]. A small proportion of respondents stated that protective PPE (goggles) (17%), protective shoes (15%) and head protectors (3%) were not available at primary health cares.

3.7 Support from primary health care leaders

Table 8. Frequency distribution based on the support of primary health care leaders

| Support of Leaders | Frequency (n) | Percentage (%) |
|--------------------|--------------|----------------|
| Nothing            | 45           | 45.0           |
| Exist              | 55           | 55.0           |

Based on table 8 it is known that almost half of the respondents (45%) stated that there was no support from primary health care leaders in the use of PPE. This is in line with research of Kasim Y, et al (2017) about the relationship of motivation and supervision with nurse compliance in the use of PPE in handling patient with musculoskeletal disorders in Manado which shows that a small proportion of respondents possess less motivation towards the use of PPE [15]. Leadership support can be in the form of motivation, rules, supervision as well as giving sanctions and praise to officers who use ADP properly. Frank explained the causes of work-related illnesses and workplace accidents caused by management's lack of control. People do not use PPE due to lack of knowledge, skills, lack of training procedures or regulations regarding work safety [16]. This shows that the need for management influence in this case the leadership in minimizing the occurrence of work accidents. Nearly half of the respondents (39%) stated that there was no praise given by the leadership to officers who used PPE completely and correctly while working. A small proportion of respondents (24%) stated that leaders did not always supervise officers when using PPE when working and leaders did not give a warning if officers did not use PPE when working (17%).

4. Conclusion

More than half of respondents (55%) use incomplete PPE when on duty. More than half of respondents (57%) are old (≥35 years), more than half of respondents (54%) have low knowledge about PPE, more than half of respondents (54%) had a negative attitude towards the use of PPE, almost half the respondents...
stated that PPE was not available (46%) at primary health care s and almost half the respondents (45%) stated that there was no support from the primary health care leaders in using PPE.

5. Suggestion
1. Increased knowledge of officers about PPE, especially regarding how to release PPE that is good and right, and the understanding of each PPE is minimal for primary health care staff.
2. The leadership is expected to emphasize the importance of using PPE for primary health care staff by giving webinars the important role of PPE or providing additional rewards for officers who adhere to use PPE in carrying out services to patients.
3. For further research can conduct bivariate analysis and qualitative research for in-depth analysis.

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