RPCPE
ISSN 2613-943X (print)
ISSN 2620-5572 (online)
Journal Homepage:
https://jurnal.ugm.ac.id/rpcpe
Review of Primary Care Practice and Education
(Kajian Praktik dan Pendidikan Layanan Primer)

The Role of Doctors in Facing the COVID-19 Pandemic in the Indonesian Worker Community

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Presented at the webinar organized by the collaboration between Indonesian Family Medicine College, Indonesian Family Doctors Association, Indonesian Society of Teachers in Family Medicine, Journal of Review on Primary Care Practice and Education, and Center for Policy Management, Department of Family and Community Medicine, Faculty of Medicine, Universitas Gadjah Mada on May 18, 2020.

To cite this article:
Dewanti L. The role of doctors in facing the COVID-19 pandemic in the Indonesian worker community. Rev Prim Care Prac and Educ. 2021; 4(1): 4-9.

INTRODUCTION

COVID-19, which is caused by the SARS-CoV-2 virus, first entered and infected Indonesians on March 1, 2020. A woman (31 years old) felt sick two days after dancing with a Japanese citizen living in Malaysia, who was also recently confirmed to have COVID-19. The woman's mother (64 years old) was finally infected and confirmed as a sufferer of COVID-19. Since then, among all contacts from Japanese citizens (33 people consisting of drivers, guides, restaurant waiters, and other guests at the dance) and from the first COVID-19 case in Indonesia (80 people), most people were those who worked directly related to the case tracing[1]. A total of 11 people were confirmed to have an infection, with 2 of them were asymptomatic cases. Of the 11 people, 10 were contacts of the foreign nationals; and 1 case was the first Indonesian citizen's mother.

The next COVID-19 cluster description in the community is very similar to the first cluster, namely work-related contacts and family contacts. New clusters continue to emerge from various industries and offices that dominate the number of new cases in Indonesia.

The government provides guidelines and policies related to the prevention of worker clusters through the Indonesian Minister of Health Circular in No. HK.SE.02.01/MENKES/216/2020 of 2020[2]. That guideline is concerning the hierarchy of controlling the risk of transmission of COVID-19 and related policies. It can happen if workers are sick and there is close contact tracing; Decree of the Minister of Health Number HK.01.07/MENKES/328/2020[3] concerning Guidelines for the Prevention and Control of Corona Virus Disease-2019 (COVID-19) in Office and Industrial Workplaces in Support of Business Continuity in Pandemic Situations. Nevertheless, government guidelines are certainly not sufficient to tackle and prevent the spread of COVID-19. Cooperation and participation of all practitioners and academics are needed, especially in health promotion (*Promkes*) and disease prevention both in the workforce and in the general public. The family is part of the workers' cluster network, and the family is the core part of society.

In the COVID-19 pandemic era, it is important to pay attention to groups of workers considering the number of workers in Indonesia is 50.9% of the total population of Indonesia[4], which of course, not all workers can work from home (WFH). Working activities related to the family and community economy cannot be avoided after the government has imposed large-scale social restrictions (PSBB) several times in several cities with relatively high cases of COVID-19. On the other hand, workers must still be protected in terms of their rights to work in a safe place (not endangering their safety and health) as stated in SDGs 2030 in goal number 8, namely "decent work and economic growth." Every state government that is part of the United Nations (UN) is bound to guarantee workers' rights by enhancing the safe and secure work conditions in the work environment[5]. For example, suppose a worker is infected in the workplace. In that case, all members of the worker's family are at risk and it eventually will penetrate the community in the family environment which will also be at risk of infection. For this reason, health observers need to actively participate in making optimal efforts for the health promotion and prevention programs to help the community (both in the working community and in the general public) so that the whole movement can mutually reinforce its benefits.

DKI Jakarta recorded that the six highest clusters of COVID-19 cases occurred in the workplace[6]. As the region with the second-largest number of COVID-19 cases after DKI Jakarta, East Java also recorded the same trend. Of the 173 clusters with 3,521 cases in East Java (as of 12

September 2020), 31% of the total sufferers were from 31 corporate clusters / formal workplaces. Other workplace clusters such as the health worker cluster, market cluster, fish auction, and other informal workplaces are not included in the company cluster, so the workplace cluster is >31% of the total COVID-19 cases in East Java[7]. The example of a cluster in a cigarette company in Surabaya started with employees who were suspected to be in an unhealthy condition but were still working in mid-April 2020. Within two weeks, the company's production had to be stopped completely to avoid the spread of disease transmission because there were 65 positive confirmed cases out of 323 current employees identified in the contact tracing.

Host-Agent-Environment Approach in the Work Environment

Studying the agent's characteristics (SARS-CoV-2), which is a short time (less than two months), has spread throughout the country. Studying the behavior and resistance of the host and how to modify the environment so that it remains pro to host conditions (HL. Blum), which is better known as the Host-Agent-Environment approach, remains relevant to be applied in the COVID-19 pandemic in the environment of workers, families, and communities.

Host

In this case, hosts are human beings who are workers, members of the working family, and the community. To avoid contracting the disease, one must consciously, and with strict discipline take primary prevention efforts (health promotion and prevention).

After the first case of COVID-19 occurred in Wuhan (December 2019), the first death of a victim of COVID-19 was reported on January 11. At the end of January 2020, there had been transmission in 10 countries, even before WHO gave the official name Coronavirus Disease-2019 (COVID-19) for the disease on February 12 and finally declared a pandemic on March 11, 2020, the fifth pandemic ever documented in history[8]. The first COVID-19 case occurred in Indonesia on March 2, and as of this writing, the addition of new cases of COVID-19 is still experiencing a high acceleration (see Figure 1). The picture of the increase in the number of active cases of COVID-19 is very pronounced in the conditions at work, so this is evidence that doctors need to understand the data on developing the number of COVID-19 cases as a strategy to deal with the pandemic in the work environment.

As a corporate doctor, whose main task is to carry out primary prevention, it is namely to promote and to prevent in the field of occupational health and safety. The COVID-19 pandemic is one of the five hazards that pose a threat to the workplace, namely biological hazards so that this hazard must be controlled in terms of danger level for the sake of creating a working and productive environment. While vaccines are not yet available (at the time of writing), the following are the efforts that have been made in a multinational company engaged in agricultural products as experience sharing. These efforts are:

1. After the data showed that human to human transmission occurred very quickly, which resulted in the outbreak of 10 countries apart from China on January 26, 2020, a pandemic preparedness program for this new disease had begun to be planned, and preparations began to be made. Company doctors should be prepared to face this pandemic wave as if preparing for the threat of another disaster. There are four cycles (mitigation, preparedness, response, recovery) that must be done to minimize the impact of the COVID-19 pandemic. MERS and SARS have hit the world. The causes from those viruses are still in the same family as SARS-CoV-2. This is including Indonesia, so it is hoped that the mitigation stage is expected (because the Indonesian health system has already faced MERS and SARS). Laboratory facilities and diagnostic test facilities for viruses and primary health facilities and networks for tracing in the community, including isolation facilities and ICU referral hospitals for severe cases, more or less have been established. It turns out to be the reality on the ground. At the beginning of the COVID-19 case (cluster 1), when the number of sick people were still small, there was no serious problem (March). See Phase 1, in Figure 1. The government could entirely handle this stage.

2. At the company level, education about COVID-19, the virus that causes it and how it is transmitted, began to be educated to all employees since early February 2020. Education to strengthen employees' understanding of COVID-19 is done every two weeks. Thermal guns and medical masks began to be ordered (February 2020) by companies even though, at that time, until June 5, 2020, the WHO did not recommend that healthy people wear masks.

   COVID-19 transmission occurs mainly through the air, which contains viral contaminants in droplets or droplet nuclei. For example, suppose someone with COVID-19 talks, coughs, or sneezes. In that case, that person can release the SARS-CoV2 virus in the form of droplets, which can enter the body of other people (inhalation) within a radius of 1 meter or droplet nuclei within a radius of ≥2 meters[9,10] (WHO, 2020; CDC, 2020). The transmission can then be avoided if each individual wears a mask and maintains a minimum distance of 1 meter. In early March, after the first case in Indonesia, all employees were given masks, and the mandatory wearing of masks was enforced.

   Another transmission is through droplets or droplet nuclei containing SARS-CoV-2 falling to the surface of an object. Another person touches the object, and the person rubs/touches his/her eyes/nose/mouth with hands that have been contaminated with the virus (indirect contact).

   Education accompanied by continuous simulation videos was done by updating the latest data from medical, scientific journals, and simplified environmental engineering. Keep in mind that changing a new habit is not easy at first. Employees are often seen clustered together during breaks and while eating; they often take off the mask if they take a nap at rest time. It was found

when the beginning of COVID-19 entered Indonesia and finally entered the city where the company is located (written as a report on findings when a close contact tracing interview was conducted). Of course, the finding must be followed-up until it is corrected). So actually, before the COVID-19 case happened to employees, employees had started to be familiar with and understand the rules (SOP) if someone was sick. Almost all employees have had an experience when being interviewed to find close contact (including when they neglected to keep their distance/removed their masks/ talk when they are not wearing masks (eating, bathing, changing clothes). They also saw firsthand the process when management renovated the windows, installed mechanical ventilation, air purifier, measured air change per hour (ACH) in crucial places such as change-rooms, dining rooms, and prayer rooms. All corrective activities related to finding were shared by all employees (especially employees who were tracing at that time). Employees gave praise by giving the nickname "Save the Humans" for all these efforts. So actually, practicing internal tracing before there were employees who were confirmed to have COVID-19 (before many cases of COVID-19 in the community and finally affecting employees in the company) is beneficial.

3. When they eat in the dining room, as before entering into a prayer room, hand washing in the changing room is applied. Each employee is given their schedule to use the dining room and change room to limit the number of users at the same time. It is advisable to be as short as possible when removing masks and not to talk/talking when in the dining room and the change room.

4. Keep working groups in one batch, and one shift neatly recorded to facilitate monitoring and tracking when needed.

5. Know the co-morbidity of each worker. These data are obtained from employee medical check-ups every year. Employees who have co-morbid conditions such as diabetes mellitus, hypertension, heart disease, asthma, and other lung disorders, or are obese are monitored for the latest data so that the co-morbid efforts can be controlled. For example, when the PSBB was implemented in areas where the company is located, there was a regulation that workers with special conditions such as moderate and severe hypertension were advised not to work during the PSBB period. The company's action was to ask the worker to seek regular treatment until his condition was controlled. Some employees have co-morbidity such as a history of heart disease then after receiving a recommendation letter from a doctor with appropriate supporting examination data (for example, an EKG or exercise stress test from the hospital). These employees are encouraged to work the morning shift because it is easier to monitor and matches their circadian rhythm.

6. The rules require sick employees such as feeling unwell/ hot/cough/sore throat/diarrhea are obliged to not come to the company. They must go to the nearest doctor and report directly to the supervisor or the company doctor. For example, suppose the treating doctor gives the employee a letter of rest for two days. In that case, the company doctor has the right to prohibit the employee from entering the company before being given a clearance: "fit to return work" by the company doctor (without administrative sanctions from the human resources division and the employee remains counted as sick leave). The regulation was socialized as a new policy, and all employees were asked to prevent COVID-19 from entering the work environment actively. Security will not allow employees to come to work without permission from the company doctor.

7. Tracing suspected COVID-19 and confirmed cases of COVID-19. Suppose one employee is sick with symptoms of fever/cough/runny nose/sore throat/diarrhea (even though he has not done a COVID-19 diagnostic test). In that case, the company doctor will trace other employees (1 shift and 1 batch) who are counted as close contacts since, during D-2 before the employee is sick, both sick and in close contact will be analyzed separately to find suspected risk factors for transmission. The finding was then searched for a solution and attempts made to solve the problem in that shift time. For example: if employee A (who later gets sick) claims to have removed a mask to drink/take a short nap (during the night shift) in the room where employee B is, then what is then done is to expand the ventilation of the room by installing mechanical ventilation or replacing windows that can be opened wider, provide a divider between tables, tighten the rules not to remove masks except when eating/ changing work clothes. Person B will be monitored and must report: "I am OK" every day to the supervisor until it is proven that A does not suffer from COVID-19 or up to 14 days from contact with Person A. At the beginning of the COVID-19 outbreak, when it entered Indonesia (until early April), the cases were still few. There are no confirmed positive cases of COVID-19 in this company. All the findings and continual improvement of these findings have proven to help companies reduce COVID-19 cases and prevent internal transmission in the company environment in the following months.

8. Suppose a spouse of an employee works at another company and finds out that a COVID-19 case is happening in that company. In that case, the employee is obliged to report to the company's supervisor and doctor. Henceforth, company doctors and management evaluate the employee's risk. If it is suspected that the employee partner is suffering from COVID-19, the company will ask for a polymerase chain reaction (PCR) swab test and quantitative serology (IgM and IgG) COVID-19 rapid test at the expense of the company. It is mostly done after the scarcity of diagnostic tests began to overcome its lack of availability in laboratories and hospitals. In cases (until the end of April 2020) where the adequacy of independent diagnostic tests has not been fulfilled, the employee is asked to carry out self-quarantine (until proven that the partner is free from suspected COVID-19).

9. For office employees (not at the plant), there is a rotating arrangement between work from home (WFH) and work from office (WFO) schedules so that the occupancy of each office room is reduced by half (1 office employee occupies one room). This policy further ensures that the safe distance is maintained.
10. When there are holidays or holidays / religious celebrations, all employees are educated on D-2 beforehand and are required to send a COVID-19 map in their respective homes showing the number of sufferers in a 500-meter radius, 1 km and 2 km from the employee's house. It is hoped that by sending the COVID-19 map, employees will become fully aware of how much exposure to COVID-19 exists in their environment. They are expected to be wise in using public places and facilities in the environment.

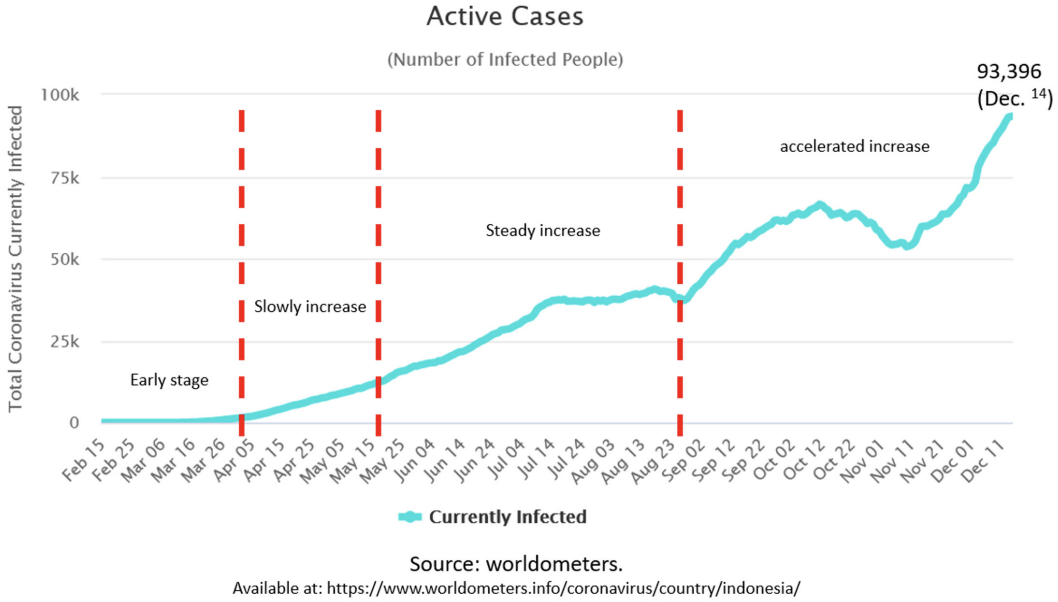

Figure 1. Increase in cases from the initial entry of COVID-19 in Indonesia to December 14, 2020. Active cases of COVID-19 are the number of cases reduced by the number of recovered cases and reduced by death cases. The image of the world meter is modified by providing an imaginary dotted line to explain the increase in cases.

On the graph, the number of infected people (= the total number of SARS CoV-2 incidents minus the number of people who recovered and died). The vertical red line is an imaginary early line (A), starting to rise slowly (B), rising steady (C), rising sharply: D1 and D2 (acceleration 1 and acceleration 2) tracking the cases of COVID-19 in Indonesia and at the company premises. The earlier prevention efforts are done in a community, the lower the transmission that occurs.

Environment

1. Evaluating the adequacy of shared room ventilation (change room, pantry, dining room, prayer room).
2. The ventilation of each room is expanded.
3. Installed additional mechanical ventilation.
4. Installed Hepa filter.
5. Installed air purifier.
6. Installation of bulkheads between tables.
7. Spraying the standard room with disinfectant: scheduled every shift change and when it will be used, especially the space that is shared. The prayer room was sprayed at 10:00 am; all the doors and windows were opened wide; carpet removed; each employee must provide prayer mats and equipment. The same is done for the dining room, hallway, change room, and shuttle car). When changing shifts, the spraying is also repeated. Temperature measuring facilities and hand washing stations are provided at all gates
8. Air disinfection in each room (scheduled 4 times / day) for 3 work shifts.
9. Disinfect the air in the shuttle.
10. Wipe with disinfectant: door handles, hand rails, stairs and touch points.
11. Using forms online (reduce the touch of paper, stationery).
12. Arrange incoming consignments (raw materials, packages, office stationery) according to health protocols and consider the possibility of viruses on the surface of the objects.

Agent

1. Everybody should always update in studying the characteristics of SARS-CoV-2 from scientific journals and some guidance from the Indonesian Ministry of Health, WHO, CDC.
2. Learn that the incubation of COVID-19: a few days-14 days (average 5 days)
3. Period of infection: H-3 (peak H-1) before symptoms appear[11]. That is one of the reasons why person-to-person transmission of COVID-19 is so fast and has become a pandemic. Before people realize that they are sick (and are still doing their usual activities) then actually the infected person has become a source of infection for their surroundings.

4. For mild cases: the virus is still in the patient's airway for 10-21 days[12].
5. The infectious power of COVID-19 sufferers is highest in the first week, then decreases in the following weeks[13]
6. Using IgG, IgM and Swab PCR serology data to determine the diagnosis during contact tracing.

Tracing Tips During the Accelerated Increase in COVID-19 Cases

During the accelerated period of increasing COVID-19 cases, namely the end of August to December (writing of this article), it is suspected that the number of asymptomatic cases is quite large. The CDC said that 40% of all cases of COVID-19 were asymptomatic[14], even in communities with less well-maintained conditions, this figure was higher, and namely 88% in homeless communities, 95% in poultry feed companies, and 96% in prisoners[15]. Meanwhile, according to the head of the COVID-19 Task Force in Indonesia, it is said to be > 70%[16].

In the corporate environment, these times are difficult times when the description of cases in the community will undoubtedly affect employees' health conditions. The increase in cases is accelerating, coupled with the number of asymptomatic cases; as a result, the person-to-person transmission will be even faster. For this reason, tactical tracing is needed in the work environment.

Suggestions:

The data uses two kinds of diagnostic tests: PCR swab and serology test (quantitative COVID-19 rapid test).

Reason: by using these two kinds of tests: the tested employees were categorized into seven groups:

PCR	IgM	IgG	*Possible interpretation*
+	-	-	*Window period of infection*
+	+	-	*Early stage of infection*
+	+	+	*Active phase of infection*
+	-	+	*Late or recurrent stage of infection*
-	+	-	*Early stage of infection; PCR may be false negative*
-	-	+	*Had past infection and has recovered*
-	+	+	*Recovery stage of the infection or PCR result may be false negative*

With these two types of diagnostic tests, false negatives and false positives can be detected to make more accurate decisions. The reason is that each test has different sensitivity and specificity and the existence of these tests varies in type and quality as well as sampling operators. PCR has a sensitivity of 75% and a specificity of 95%[17]. However, sometimes there are inaccuracies in the sampling process by officers (perhaps new officers are trained so that they are not standardized), while the serology/rapid test sensitivity is low at the beginning of infection but then increases high, especially at the 3rd week as follows[18]:

- *Day 1-7th*: 30.1% (95% CI: 21.4 *to* 40.7)
- *Day 8-14th*: 72.2% (95% CI: 63.5 *to* 79.5)
- *Day 15-21st*: 91.4% (95% CI: 87.0 *to* 94.4)

The testing that is followed by serial tests (with PCR and COVID-19 serology) found many positive employee clusters. The priority action is to select the cluster with the most current infection status (window period and early-stage) because at that time, the employee who was the first case is the most infectious compared to other phase cases (late infection).

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