Factors Associated with Death in COVID-19 Patients in Jakarta, Indonesia: An Epidemiological Study

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ABSTRAK

Latar belakang: *penyakit Coronavirus 2019 adalah penyakit sistem pernapasan yang baru saja muncul dan menjadi pandemi. Indonesia mengalami peningkatan jumlah kasus yang cukup drastis tetapi data lokal terkait hal ini masih jarang didapatkan.* ***Metode:*** *analisis dalam riset ini menggunakan data rekapitulasi Penelusuran Epidemiologi (PE) yang dikeluarkan oleh Pemerintah Daerah Khusus Ibukota Jakarta dari 2 Maret hingga 27 April 2020.* ***Hasil:*** *dari total 4.052 pasien, 381 (9,4%) pasien meninggal. Analisis multivariabel menunjukkan bahwa kematian berhubungan dengan usia tua (odds ratio [OR] 1,03; 95% confidence interval [CI] 1,02, 1,05, peningkatan usia per tahun; p<0,001), sesak napas (OR 4,83; 95% CI 3,20, 7,29; p <0,001), pneumonia (OR 2,46; 95%CI 1,56, 3,88; p<0,001), dan riwayat hipertensi (OR 1,86; 95%CI 1,24, 2,78; p=0,003). Angka kematian tertinggi terjadi pada 6 April 2020 dan menurun di beberapa pekan selanjutnya, setelah pembatasan sosial berskala besar diberlakukan.* ***Kesimpulan:*** *usia tua, sesak napas, pneumonia, dan riwayat hipertensi berhubugan dengan risiko kematian. Mortalitas tergolong tinggi tetapi mungkin dapat dikurangi dengan pembatasan interaksi sosial.*

Kata kunci: *COVID-19, kematian, Indonesia, Jakarta, karakteristik pasien.*

ABSTRACT

Background: *Coronavirus Disease 2019 is an emerging respiratory disease that is now a pandemic. Indonesia is experiencing a rapid surge of cases but the local data are scarce.* ***Methods:*** *this is an analysis using data from the ongoing recapitulation of Epidemiological Surveillance (ES) by the Provincial Health Office of Jakarta from March 2nd to April 27th 2020. We evaluated demographic and clinical characteristics of all confirmed cases in association with death.* ***Results:*** *of the 4,052 patients, 381 (9.4%) patients were deceased. Multivariable analysis showed that death was associated with older age (odds ratio [OR] 1.03; 95% confidence interval [CI] 1.02, 1.05, per year increase; p<0.001), dyspnea (OR 4.83; 95% CI 3.20, 7.29; p<0.001), pneumonia (OR 2.46; 95%CI 1.56, 3.88; p<0.001), and pre-existing hypertension (OR 1.86; 95% CI 1.24, 2.78; p=0.003). Death was*

highest in the week of April 6th 2020 and declined in the subsequent weeks, after a large-scale social restriction commenced. ***Conclusion:*** *older age, dyspnea, pneumonia, and pre-existing hypertension were associated with death. Mortality was high, but may be reduced by lockdown.*

Keywords: *COVID-19, death, Indonesia, Jakarta, patient characteristics.*

INTRODUCTION

Coronavirus Disease 19, or widely known as COVID-19 is a new emerging respiratory disease that can cause respiratory failure due to severe pneumonia.[1] This viral infection was first reported in December 2019 in Wuhan, China and suspected to be transmitted through zoonotic origin, followed by human to human transmission.[2] By May 22nd 2020, a total of 4,993,470 confirmed cases have been reported globally and the disease has spread rapidly throughout at least 215 countries, including Indonesia.[3]

The first two cases in Indonesia were identified in West Java Province on March 2nd 2020.[4] Thenceforth, the number of COVID-19 cases in the country increased remarkably, reaching 20,796 confirmed cases on April 22nd 2020. At the time of preparing this manuscript, the number of COVID-19 cases and mortality rates in Indonesia are still increasing and the end of the epidemic is still uncertain.[5,6] Published reports on the epidemiology and clinical characteristics of COVID-19 cases from Indonesia are scarce. High-quality evidence is important for understanding the disease, improving the quality of care of patients and could serve as a basis for policy making. In this study, we analyze demographic and clinical parameters associated with the mortality of laboratory-confirmed cases with COVID-19 in DKI Jakarta, Indonesia.

METHODS

This is a retrospective cohort study using data from the ongoing recapitulation of Epidemiological Surveillance (ES) conducted by the Provincial Health Office of Capital Special Region of Jakarta (*Dinas Kesehatan/ Dinkes Provinsi DKI Jakarta*).

The laboratory-confirmed patients are defined as patients with a positive result on real-time reverse transcription polymerase chain reaction (RT-PCR) for the presence of SARS-CoV-2 in either the nasal or pharyngeal swab specimens, irrespective of the clinical signs and symptoms. All confirmed cases of COVID-19 in Jakarta between March 2nd 2020 and April 29th 2020 were included in the analysis. This study was approved by The Ethics Committee of Faculty of Medicine University of Indonesia (No: KET-506/ UN2.F1/ETIK/PPM.00.02/2020).

Data collection

Data were collected using Epidemiological Surveillance (Penyelidikan Epidemiologi/PE) forms which were distributed to all healthcare facilities in the province, including all public primary care centres (Puskesmas) and public and private hospitals. Doctors or nurses who provided care for patients suspected with COVID-19 infection were obliged to fill in the PE. The PE forms were later being submitted to Dinkes Provinsi DKI Jakarta.

The PE form consists of questions related to patient demographic characteristics and clinical information. Signs and symptoms that were asked in the questionnaire included body temperature and the presence of fever, cough, cold, sore throat, dyspnea, chills, headache, malaise, myalgia, nausea and emesis, abdominal pain and diarrhea. Other conditions and comorbidities that were asked included the presence history of diabetes, heart disease, hypertension, malignancy, immunologic disorder, chronic kidney failure, chronic liver failure, and chronic obstructive pulmonary disease (COPD). In case patients were hospitalized, the start and end date of hospitalization were recorded together with whether there was admission to the intensive care unit (ICU), intubation performed, and the use of extracorporeal membrane oxygenation (ECMO) machine. The end date of hospitalization was also recorded and data about the clinical outcomes were collected.

Age was classified into 5 groups; 0-9 years, 10-19 years, 20-49 years, 50-69 years, and older than 70 years. Patient's address was classified into 6 groups; including 5 areas of Jakarta (South, West, East, North, and Central) and outside Jakarta if patients had non-Jakarta address. Within subjects with available data of body temperature, we categorized them into 4 groups (<37°C, 37.3–38°C, 38.1– 39°C, and >39°C). The time from the onset of the symptoms to nasal and/or throat swab tests were used as a proxy for patient's access to a health facility with a shorter number represents better access.

Outcome Measures

Death was considered as the main outcome in this study. All deaths that occurred after the diagnosis of COVID-19 were considered to be the consequence of the infection. This clinical outcome was followed up until April 29th 2020.

Data Analysis

Patients' demographic information and clinical characteristics were tabulated for descriptive purposes. All these variables were considered as potential predictors of death during the follow-up time. Univariable regression was first performed to evaluate the unadjusted relation between each predictor and the occurrence of death. We selected the statistically significant predictors from the univariable analysis and evaluated them using multivariable logistic regression.

Results are expressed as odds ratios (ORs) with 95% confidence intervals (CIs) and corresponding p values. Statistical significance was considered to be a 2-sided p value <0.05. All analyses were performed using SPSS Version 25.0 for Mac (SPSS Inc., Chicago, IL, USA).

RESULTS

Of the 4,052 COVID-19 patients included in the study, 381 (9.4%) patients were deceased, while 3670 (90.6%) patients survived (**Table 1**). Among the surviving patients, 412 (11.2%) patients were cured, 2,012 (54.8%) patients were still hospitalised, and 1,246 (33.6%) patients were in self-isolation.

Table 1 shows the demographic and clinical characteristics of the study population in total and separately for those who died and those who survived. The mean age of the patients was 45.8 years. The majority of the patients were from age groups of 20 to 49 years and 50 to 69 years (51.2% and 37.6% respectively, from the total population). Those who died were significantly older than those who survived. Similarly, analysis by age groups also showed significant differences in the risk of death with more patients in the 50 to 69 years and older than 70 years groups dying. There were more male patients in the total population and among those who died. The majority of the patients had non-Jakarta addresses and death rates were significantly different depending on the area where they lived.

Among all the comorbidities, hypertension was revealed to be the most common disease reported (18.3%), followed by diabetes (11.1%), heart disease (6.9%), and COPD (5.6%). Among 800 patients with the non-missing data on the existence of all comorbidities, 83.6% were reported to having at least one comorbidity. The proportion of patients with hypertension, diabetes, heart disease, and renal diseases were significantly higher in those who died.

Cough (61.0%), fever (53.0%), malaise (32.4%) and dyspnea (30.2%) were the most commonly reported symptoms, while pneumonia occurred in 41.1% of patients. The proportion of patients with these symptoms and pneumonia was also significantly higher among those who died. Within 655 patients with reported body temperature, the majority had a body temperature between 37.3 – 38.0°C.

The mean duration between symptom onset and swab test in the total population was 7 days (SD 6.0) and was significantly different between those who died and those who survived (9.9 days vs 8 days, $p < 0.001$). The following procedures were also more common in those who died as compared to those who survived; ICU admission (20 [16.0%] vs 17 [1.2%], $p < 0.001$), intubation (17 [13.8%] vs 11 [0.8%], $p < 0.001$), and ECMO (7 [5.9%] vs 4 [0.3%], $p < 0.001$).

In **Table 2**, we show that in the univariable analysis, older age, being older than 70 years, male, residing in Central or South Jakarta, having symptoms of cough, fever, malaise, dyspnea,

Table 1. Baseline characteristics of the patients.

Characteristics	Total (n=4052)	Death	
		Yes (n=381)	No (n=3670)
Age (n=3986)	45.8 (16.3)	58.2 (14.3)	44.5 (15.9)
Age group			
- 0 to 9 years	47 (1.2)	4 (1.1)	43 (1.2)
- 10 to 19 years	133 (3.3)	2 (0.5)	131 (3.6)
- 20 to 49 years	2040 (51.2)	69 (18.4)	1971 (54.6)
- 50 to 69 years	1497 (37.6)	220 (58.5)	1277 (35.4)
- Older than 70 years	269 (6.8)	81 (21.5)	188 (5.2)
Sex (n=4043), male	2169 (53.5)	256 (67.5)	1913 (52.2)
Registered address (n=3657)			
- West Jakarta	571 (14.1)	51 (13.4)	520 (14.2)
- Central Jakarta	554 (13.7)	57 (15.0)	497 (13.5)
- South Jakarta	627 (15.5)	88 (23.1)	539 (14.7)
- East Jakarta	666 (16.4)	81 (21.3)	585 (16.0)
- North Jakarta	459 (11.3)	41 (10.8)	418 (11.4)
- Outside Jakarta	1161 (28.7)	63 (16.5)	1098 (30.0)
Citizenship (n=4051)			
- Indonesian	3915 (96.6)	374 (98.2)	3541 (96.5)
- Foreigner	136 (3.4)	7 (1.8)	129 (3.5)
Symptoms			
- Cough (n=2258)	1377 (61.0)	184 (81.8)	1193 (58.7)
- Fever (n=2242)	1189 (53.0)	167 (74.6)	1022 (50.6)
- Malaise (n=2123)	688 (32.4)	115 (57.2)	573 (29.8)
- Dyspnea (n=2255)	682 (30.2)	167 (74.2)	515 (25.4)
- Headache (n=2128)	483 (22.7)	61 (30.5)	422 (21.9)
- Nausea/emesis (n=2058)	434 (21.1)	57 (29.7)	377 (20.2)
- Sore throat (n=2256)	508 (22.5)	71 (31.7)	437 (21.5)
- Cold/runny nose (n=2255)	507 (22.5)	49 (21.7)	458 (22.6)
- Myalgia (n=2087)	360 (17.2)	41 (21.2)	319 (16.8)
- Chills (n=2081)	231 (11.1)	40 (20.6)	191 (10.1)
- Abdominal pain (n=2069)	145 (7.0)	19 (9.9)	126 (6.7)
- Diarrhea (n=2126)	170 (8.0)	21 (10.6)	149 (7.7)
- Pneumonia (n=2077)	853 (41.1)	182 (81.6)	671 (36.2)
Temperature (n=655)			
- < 37.3 ºC	194 (29.6)	14 (16.7)	180 (31.5)
- 37.3 – 38.0 ºC	273 (41.7)	37 (44.0)	236 (41.3)
- 38.1 – 39.0 ºC	158 (24.1)	26 (31.0)	132 (23.1)
- >39.0 ºC	30 (4.6)	7 (8.3)	23 (4.0)
Existing comorbidity (n=800)	669 (83.6)	153 (92.7)	516 (81.3)
Comorbidities			
- Hypertension (n=2131)	390 (18.3)	106 (47.5)	284 (14.9)
- COPD (n=2229)	125 (5.6)	14 (6.2)	111 (5.5)
- Diabetes (n=2131)	236 (11.1)	66 (29.5)	170 (8.9)
- Heart disease (n=2131)	148 (6.9)	49 (22.0)	99 (5.2)
- Renal disease (n=2129)	37 (0.9)	19 (8.5)	18 (0.9)
- Malignancy (n=2131)	8 (0.2)	2 (0.9)	6 (0.3)
- Immunological disorder (n=2132)	14 (0.3)	4 (1.8)	10 (0.5)
- Liver failure (n=2126)	5 (0.1)	2 (0.9)	3 (0.2)
- Obesity	5 (0.1)	0 (0.0)	5 (3.2)

Values are means with standard deviations in for continuous variables and n (%) for frequencies. In case skewed data (*), the median with the interquartile range is presented. COPD = chronic obstructive pulmonary disease.

Table 2. Factors associated with death in patients with laboratory confirmed COVID-19

Variable	Univariable		Multivariable	
	OR (95% CI)	p-value	OR (95% CI)	p-value
Age	1.06 (1.05; 1.07)	<0.001	1.03 (1.02; 1.05)	<0.001
Age group				
- 0 to 9 years	Reference			
- 10 to 19 years	0.16 (0.03; 0.93)	0.041		
- 20 to 49 years	0.38 (0.13; 1.08)	0.069		
- 50 to 69 years	1.85 (0.66; 5.21)	0.243		
- Older than 70 years	4.63 (1.61; 13.33)	0.004		
Sex, male	1.91 (1.52; 2.39)	<0.001	1.17 (0.80, 1.70)	0.42
Registered address				
- West Jakarta	1.17 (0.79, 1.74)	0.44	1.03 (0.54, 1.97)	0.92
- Central Jakarta	1.67 (1.16, 2.40)	0.006	0.87 (0.47, 1.61)	0.66
- South Jakarta	1.41 (0.98, 2.04)	0.07	0.99 (0.53, 1.82)	0.96
- East Jakarta	1.00 (0.65, 1.54)	1.00	1.04 (0.54, 1.98)	0.92
- North Jakarta	0.59 (0.40, 0.86)	0.006	0.93 (0.49, 1.79)	0.83
- Outside Jakarta	Reference		Reference	
Citizenship, foreigner	0.51 (0.24; 1.11)	0.09		
Symptoms				
- Cough	3.16 (2.23; 4.48)	<0.001	1.01 (0.62; 1.63)	0.98
- Fever	2.86 (2.09; 3.91)	<0.001	1.26 (0.83; 1.93)	0.28
- Malaise	3.15 (2.34; 4.23)	<0.001	1.04 (0.67; 1.59)	0.88
- Dyspnea	8.47 (6.18; 11.61)	<0.001	4.83 (3.20; 7.29)	<0.001
- Headache	1.57 (1.14; 2.16)	0.006	1.09 (0.71; 1.67)	0.71
- Nausea/emesis	1.67 (1.20; 2.32)	0.002	0.79 (0.52; 1.21)	0.28
- Sore throat	1.69 (1.25; 2.29)	0.001	1.00 (0.66; 1.51)	0.98
- Cold/runny nose	0.95 (0.68; 1.32)	0.95		
- Myalgia	1.33 (0.92; 1.92)	0.13		
- Chills	2.31 (1.58; 3.37)	<0.001	1.02 (0.62; 1.69)	0.95
- Abdominal pain	1.53 (0.92; 2.53)	0.10		
- Diarrhea	1.41 (0.87; 2.28)	0.16		
- Pneumonia	7.83 (5.05; 11.13)	<0.001	2.46 (1.56; 3.88)	<0.001
Temperature				
- < 37.3 °C	Reference			
- 37.3 – 38.0 °C	2.12 (1.06; 3.84))	0.03		
- 38.1 – 39.0 °C	2.53 (1.27; 5.04)	0.008		
- >39.0 °C	3.92 (1.43; 10.70)	0.008		
Existing comorbidity, yes	2.94 (1.58; 5.47)	0.001		
Comorbidity				
- Hypertension	5.18 (3.87; 6.93)	<0.001	1.86 (1.24; 2.78)	0.003
- COPD	1.12 (0.63; 1.99)	0.70		
- Diabetes	4.27 (3.08; 5.92)	<0.001	1.26 (0.80; 1.98)	0.32
- Heart disease	5.15 (3.53; 7.50)	<0.001	1.43 (0.85; 2.41)	0.18
- Renal disease	9.77 (5.05; 18.91)	<0.001	2.42 (0.99; 5.95)	0.06
- Malignancy	2.87 (0.58; 14.30)	0.20		
- Immunological disorder	3.47 (1.08; 11.15)	0.04	2.63 (0.44; 15.77)	0.29
- Liver failure	5.76 (0.96; 34.66)	0.06		
- Obesity	a			

Data are presented as OR from (univariable or multivariable) logistic regression coefficients with 95% confidence intervals for every one-unit increase in the predictor or for positive predictor. COPD = chronic obstructive pulmonary disease. aThe number of cases was too small to enable analysis.

headache, nausea/emesis, sore throat, chills, and pneumonia were significantly associated with a higher risk of death. Deaths were also more likely with higher body temperature, pre-existing comorbidities (mainly hypertension, diabetes, heart disease, renal disease, and immunological disorder).

When all significant demographic and clinical characteristics ($p < 0.05$) were included in the multivariable analysis, we show that most associations between these characteristics and the occurrence of deaths became non-significant. The characteristics which remained significantly associated with higher mortality were older age (OR 1.03, one year increment), dyspnea (OR 4.83), evidence of pneumonia (OR 2.46), and pre-existing hypertension (OR 1.86).

Based on the total number of deaths and confirmed cases, the case fatality rate (CFR) in Jakarta was estimated to be 9.4%. The number of confirmed cases and death due to COVID-19 showed an increased surge during the observation period. The weekly number of new confirmed cases was consistently increasing during the observation period (**Figure 1**). The weekly number of deaths, on the other hand, reached its peak in the week of April 6th 2020 and dropped in the following weeks. This is as shown in **Figure 2** where the slope becomes less steep in the following weeks after April 6th 2020.

DISCUSSION

In the present study we provided evidence suggesting that among laboratory-confirmed cases of COVID-19 in Jakarta, the odds of death were greater if patients were older, had dyspnea, pneumonia, and pre-existing hypertension.

To the best of our knowledge, this is the

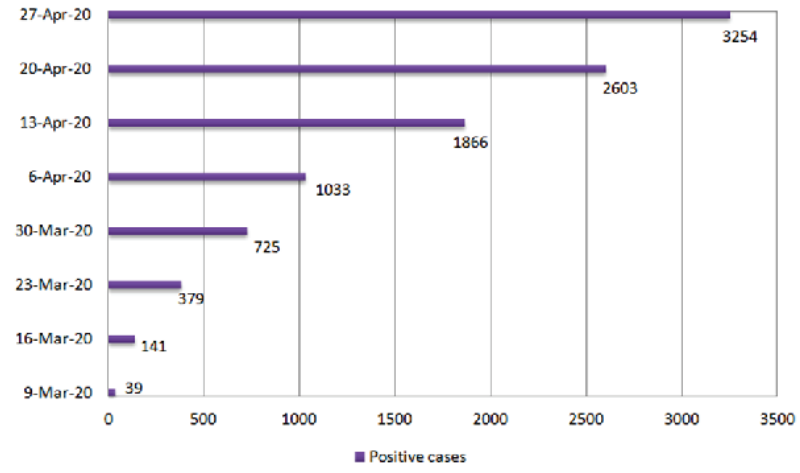

Figure 1. Weekly cumulative number of COVID-19 cases in Jakarta, Indonesia.

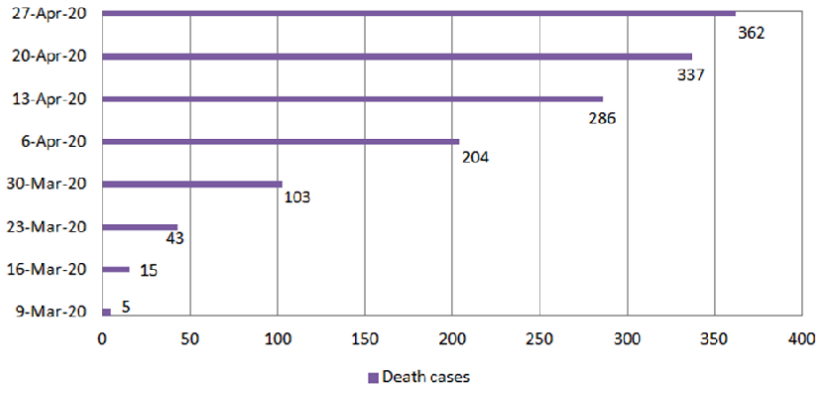

Figure 2. Weekly cumulative number of deaths in patients with COVID-19 in Jakarta, Indonesia.

first and largest analysis using epidemiological surveillance data to assess risk factors for mortality in laboratory-confirmed COVID-19 patients in Indonesia. The study population was comprised of people living in the epicenter of local transmissions, the urban setting of Jakarta and its surrounding area (Jabodetabek) with relatively good access to the healthcare facility. In terms of time, this study captured the initial phase of the epidemic in Indonesia (within 2 months after the first case of COVID-19 in Indonesia was reported). The data comprising the entire population with laboratory confirmed COVID-19 in the area were included in the analysis.

Our finding that older age was related with higher mortality in COVID-19 patients is in concordance with several previous studies.[7,8] Mortality was higher by 10% per year increase in these studies as compared to 3% in the present study. This difference might be attributed to the fact that only adult patients were included in the previous study. Our finding also confirms previous studies that showed significant increased risk of death in patients aged >65 years.[9,10] Due to impaired immune response, older patients tend to have a more serious condition and poorer response to treatments.

Pneumonia and dyspnea (shortness of breath) have been reported to be associated with death in the previous studies.[11,12] The latter was associated with the occurrence of acute respiratory distress syndrome (ARDS) in COVID-19 patients.[8] In addition, an earlier study also revealed that early onset of dyspnea may be a marker of poor prognosis.[11] These findings are also supported by a meta-analysis which suggested that patients with dyspnea showed worse clinical outcomes.[12] In the present study a total of 41% patients were reported with pneumonia and 30% had dyspnea. The proportions are higher than in China where less than 20% confirmed cases had pneumonia and only 14% had dyspnea.[13]

This study revealed pre-existing hypertension was independently associated with mortality in COVID-19 patients in Jakarta. Earlier studies also reported that hypertension was the most common underlying disease of the COVID-19 patients, especially in fatal cases.[8,11,14] Disruption of the renin-angiotensin system may explain this phenomenon.[15] It is postulated that pre-existing cardiovascular disease, including hypertension, contributes to the occurrence of pneumonia and fatal symptoms in COVID-19.[16] Our analysis showed that COVID-19 patients with pre-existing hypertension have an approximately 2-fold risk of death as compared to patients without. This is relatively comparable to the increased risk of developing severe COVID-19 (OR:2.92) estimated by a large meta-analysis from China.[17]

The unadjusted analyses showed that diabetes increased risk of death in COVID-19 patients but this association became non-significant after adjustment for other characteristics (age, sex, symptoms, and other comorbidities). This finding suggests that diabetes itself may not have direct implication on infection severity, but rather present coexisting with other worsening factors such as older age and hypertension. This is in line with previous studies which showed no significant association between diabetes and mortality of COVID-19 patients when other factors such as age, sex, other comorbidities were taken into account in the analyses.[18,19]

We showed a case fatality rate (CFR) of 9.4% in our study population, which was among the highest in the world. This rate leads among countries in Southeast Asia, higher than in Wuhan, China (4.3% of confirmed cases) and is almost twice the global mortality rate of 5.97%.[20,21] The high CFR in our population might partially be explained by the limited capacity of PCR testing which resulted in serious under-reporting.[22] It is estimated that only 0.03 tests were done daily per thousand people.20 Patients with more pronounced symptoms and therefore a more severe condition were more likely to seek help and therefore had better access to PCR tests. Nonetheless, the high CFR might also reflect poorer healthcare capacity in responding to the epidemic. Data from the Provincial Health Office of Special Capital Region of Jakarta revealed the death cases during February 2020 were 5792 people, markedly increased from January 2020 (3072 deaths).[23] This might indicate undetected deaths related to COVID-19 before the first case was diagnosed in Indonesia.

About one third of patients in this study had a registered address outside Jakarta. This finding might indicate the urban problem of Jakarta and public health problems. Many people possibly work and live in Jakarta while still maintaining their "outside Jakarta" address on their ID card. Additionally, people who live in the surrounding areas near Jakarta might prefer to go to Jakarta when seeking medical services. Therefore, basing the calculation of healthcare services demand solely on the number of Jakarta inhabitants would result in serious overestimation of Jakarta's preparedness for the pandemic.

A large-scale social restriction (pembatasan sosial berskala besar or PSBB) has been imposed in Jakarta since April 10th 2020.[24] The PSBB in Jakarta seems to create an impact in reducing the curve slope of both the cumulative number of confirmed cases and the number of deaths (**Figure 1** and **2**). The number of weekly new confirmed cases dropped to 651 patients in the period between April 20th and April 26th 2020, 10 days after PSBB was applied. This number was lower than in the previous weeks and in the early days of PSBB (833 patients between April 6th – April 13th 2020). In line with this, the number of weekly death cases dropped to 25 patients in the period between April 20th and April 26th 2020. This number was lower than in the previous weeks and in the early days of PSBB (82 patients between 6 April – 13 April 2020). These results are preliminary but indicate the effectiveness of the large-scale social restriction in controlling the spread and mitigating the catastrophe of COVID-19. The mathematical modeling suggested that quarantine, school closure and social distancing had an impact in the reduction of COVID-19 cases.[25,26] India, which adopted early social distancing and social lockdown had lower mortality (3%) due to COVID-19 compared to Spain (12%) and France (19.9%).[3,27] Australia experienced success in decreasing the rate of COVID-19 cases together with low mortality rate (1.4% per 10 May 2020) as an impact of international travel restrictions and social distancing.[28]

This study has several limitations. First, no data were available regarding the diagnostic and treatment received by the patients. Diagnostic and therapeutic measures, notably, may have a significant role in modifying the clinical course of the disease and its outcomes. Laboratory and radiologic findings may provide insights into the course of the disease and severity of the condition. In the absence of such information, interpretation of our findings needs to be done with caution. Secondly, some information in the PE form was missing because it was left empty by the interviewer. Proper training of the healthcare providers might increase the quality of the PE form database.

CONCLUSION

We identified older age, dyspnea, pneumonia, and pre-existing hypertension as predictors for mortality among the laboratory confirmed cases of COVID-19 in DKI Jakarta, Indonesia. The mortality rate was high at 9.4%. The research has also shown the apparent beneficial impact of PSBB in reducing the spread of COVID-19.

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