

## ORIGINAL RESEARCH

# COVID-19 PATIENTS' CHARACTERISTIC IN COVID-19 REFERRAL HOSPITAL, SURABAYA, INDONESIA

*Epidemiologi dan Karakteristik Klinis Pasien COVID-19 di Rumah Sakit Rujukan COVID-19, Surabaya, Indonesia, Juli-Agustus 2020*

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## ABSTRACT

**Background:** Coronavirus 2019 (COVID-19) is a global pandemic with various clinical manifestations and is affected by multifactor. Epidemiological data of COVID-19 in Indonesia, especially in Surabaya have not been well established yet. **Purpose:** This study aims to provide the COVID-19 patients profile in Surabaya City, Indonesia. **Method:** The study data were retrospectively collected from electrical medical records in Primasatya Husada Citra (PHC) Hospital of Surabaya, one of the referral hospitals for COVID-19 in Surabaya. Descriptive and Spearman correlation statistics were done for data analysis. **Results:** Between 1 July – 31 August 2020, 456 subjects were diagnosed positive for COVID-19 by real-time polymerase chain reaction and enrolled in the study. Study subjects were dominated by the group age of 21-30 (26.75%), male (60.30%), living in East Surabaya (16.22%), and mild to moderate disease severity (47.59%) according to the patient's clinical manifestation, respiration rate, and peripheral oxygen saturation. Subjects with symptoms were majorly having cough (37.93%), fever (29.38%), malaise (28.07%), and dyspnoea (25.00%). Positive correlation was found between disease severity and group of age ( $r=0.35$ ;  $p=0.01$ ), gender ( $r = 0.13$ ;  $p=0.01$ ), comorbidities (diabetes mellitus, hypertension, and cardiovascular disease), and X-ray findings ( $r=0.14$ ;  $p=0.02$ ). A negative correlation was found between disease severity and the region of domicile ( $r=-0.15$ ;  $p=0.01$ ). **Conclusion:** This epidemiological data of COVID-19 patients in Surabaya city, Indonesia, may help in diagnosing COVID-19 patients and improving health management strategies during a

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pandemic. Patients need to be aware of COVID-19 and understand disease transmission, especially with symptoms and risk factors.

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### ABSTRAK

**Latar Belakang:** COVID-19 merupakan pandemi global dengan manifestasi klinis yang bervariasi dan dipengaruhi oleh banyak faktor. Data epidemiologi dari pasien COVID-19 di Indonesia terutama Surabaya belum banyak dipublikasikan. **Tujuan:** Penelitian ini menyediakan profil pasien COVID-19 di Surabaya, Indonesia. **Metode:** Data disajikan secara deskriptif dan hubungan antar variabel dianalisis menggunakan korelasi Spearman. Data penelitian dikumpulkan secara retrospektif dari rekam medis elektronik di Rumah Sakit Primasatya Husada Citra (PHC) Surabaya yang merupakan salah satu rumah sakit rujukan COVID-19 di Surabaya. **Hasil:** Antara tanggal 1 Juli – 31 Agustus 2020, terdapat 456 pasien yang terdiagnosis COVID-19 melalui pemeriksaan polymerase chain reaction dan didaftarkan dalam penelitian ini. Subjek penelitian didominasi oleh kelompok usia 21-30 tahun (26,75%), laki-laki (60,30%), tinggal di Surabaya Timur (16,22%), dan dengan keparahan penyakit ringan-sedang (47,59%) berdasarkan dari gejala klinis, frekuensi pernapasan, dan saturasi oksigen perifer. Subjek yang memiliki keluhan mayoritas mengalami batuk (37,93%), demam (29,38%), malaise (28,07%), dan sesak (25,00%). Terdapat korelasi positif antara keparahan penyakit dengan kelompok usia ( $r=0,36$ ;  $p=0,01$ ), jenis kelamin ( $r = 0,13$ ;  $p=0,01$ ), penyakit komorbid (diabetes mellitus, hipertensi, and penyakit kardiovaskular), dan hasil X-ray, ( $r=0,14$ ;  $p=0,02$ ). Korelasi negative ditemukan antara keparahan penyakit dan domisili pasien ( $r=-0,15$ ;  $p=0,01$ ). **Kesimpulan:** Penelitian ini menyediakan data epidemiologi dari pasien COVID-19 di Surabaya, Indonesia yang dapat membantu diagnosis pasien COVID-19 dan meningkatkan strategi manajemen kesehatan saat pandemi. Pasien perlu berhati-hati dan memahami penularan COVID-19, terutama pasien yang memiliki gejala klinis dan faktor risiko.

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## INTRODUCTION

Coronavirus disease 2019 (COVID-19) is a global pandemic that started with an outbreak in Wuhan, China, in late 2019. This disease had spread to more than 200 countries during the mid-2020 and had infected more than twelve million people worldwide (World Health Organization, 2020a). In September 2020, COVID-19 had infected more than thirty million people worldwide, with the number of death of more than nine hundred seventy thousand people (World Health Organization, 2020c). On 2 March 2020, the two first cases of COVID-19 were found in

Indonesia. The of infected people in Indonesia is gradually increasing, and it reaches more than 262022 confirmed patients on 24 September 2020 (Indonesia's COVID-19 Handling Task Force, 2020).

SARS-CoV-2 may spread between humans through direct and indirect contact. The virus was spread through the droplet of COVID-19 patients. Droplet is produced in the patient's airway, and it is transmitted when the patient coughs, sneezes, speaks or sings. Airway droplet transmission may happen through close contact within one meter. It is important to keep a distance from other people, especially suspected (World Health Organization,

2020b). Several symptoms appear in COVID-19 patients. The common symptoms are fever, cough, fatigue, dyspnoea, myalgia, diarrhoea, sore throat, nausea, vomiting, and anosmia (Lovato & de Filippis, 2020; Tian et al., 2020).

The COVID-19 may infect in all stages of age; a higher number of patients were found in the elderly (Li et al., 2020). Patients' comorbidity may also increase the risk of having poorer clinical outcomes than patients without comorbidities. It was reported 399 patients (25.10%) had at least one comorbidity, while patients with more comorbid conditions showed poorer clinical outcomes (Guan et al., 2020).

Complete blood count, inflammatory mediator parameters, coagulation tests, and biochemical parameters are routinely checked to diagnose and determine the patient's prognosis. Laboratory findings may also help medical workers to differentiate between severe and non-severe patients (Pourbagheri-sigaroodi, Bashash, Fateh, & Abolghasemi, 2020). Consolidation and ground-glass opacity involving both lungs are found to be classical signs in a chest X-ray. A study reported 81.00% of patients had bilateral involvement in chest X-ray and CT-scan, with 73.50% of patients having consolidation and ground-glass opacity (Pormohammad et al., 2020).

The results of preliminary studies that researchers did that Primasatya Husada Citra (PHC) hospital of Surabaya is one of the referral hospitals for COVID-19 patients in Surabaya appointed by the Ministry of Health Republic of Indonesia. PHC hospital is located in north Surabaya with 235 total hospital bed capacity; almost 50.00% are being used to treat COVID-19 patients. From July to August 2020, there were 1057 inpatient cases with the prevalence of COVID-19 patients at 44.37%. This manuscript aims to provide a COVID-19 profile in Indonesia, especially in Surabaya. This data may help medical workers understand common signs and symptoms found in our surroundings.

## METHODS

### Study design and data source

A cross-sectional study was conducted based on July-August 2020 COVID-19 data in PHC Hospital Surabaya. Data was obtained from PHC Hospital electronic medical records.

### Study population and data collection

Our study population was COVID-19 patients in PHC Hospital Surabaya from July-August 2020.

Total sampling was used to recruit study samples. The cases were classified based on COVID-19 clinical classification as stated by the Ministry of the Health Republic of Indonesia. Based on WHO guidelines, the COVID-19 diagnosis was done by real-time polymerase chain reaction (RT-PCR). All socio-demographic, clinical, laboratory and radiologic findings were obtained from patients' medical records.

Variables of age (patient's current age), gender, the region of domicile (patient's current residence), disease severity (according to the Ministry of Health Republic of Indonesia COVID-19 guideline), comorbidity (comorbid diseases), laboratory findings (complete blood count test), and radiologic findings (chest X-ray examination) were recorded in this study.

Patient's age was divided into range of 0-4, 5-13, 14-20, 21-30, 31-40, 41-50, 51-60, 61-70, and 71-80 years old. Gender was categorized into male and female. The region of domicile was categorized into North, East, West, South, Central, and Outside Surabaya. The disease was classified on the patient's clinical manifestation, respiration rate, and peripheral oxygen saturation according to the Ministry of Health Republic of Indonesia COVID-19 guideline classification. Patients are categorized into three groups; asymptomatic, mild-moderate, and severe. The comorbid disease was categorized based on the patient's number of diseases, no comorbid to 4 comorbid diseases.

Laboratory findings were categorized based on the mean and standard deviation values collected in this study. Radiology findings were classified based on the British Society of Thoracic Imaging (BSTI) chest radiography reporting criteria. They were divided into normal (no abnormalities and COVID-19 not excluded), classic (lower lobe and peripheral predominant multiple opacities that are bilateral), indeterminate (does not fit the classic or non-COVID-19 descriptors or poor-quality film), and other features (pneumothorax/lobar pneumonia/pleural effusion / pulmonary oedema/other).

### Statistical analyses

A descriptive statistic was conducted, normally distributed continuous data were described using means and standard deviations (SD), while non-normally distributed data were described using median and interquartile ranges (IQR). Spearman correlation analysis was done to analyse the correlation among variables. A p-value of <0.05 was considered statistically significant. The report of this study was structured by

following the STROBE statement. The study protocol was approved by the Health Research Ethics Committee of Widya Mandala Catholic University Surabaya Faculty of Medicine with reference number 107/WM12/KEPK/DOSEN/T/2020.

## RESULTS

### Age and Disease Severity

In Indonesia, COVID-19 severity was classified on the guidelines released by the Ministry of the Health Republic of Indonesia as asymptomatic, mild, moderate, severe, and critical. Our study classified the disease severity into three categories: asymptomatic, mild-moderate, and severe. The critical patients were categorized as severe in this study. The majority of the cases in our study were mild-moderate cases, as shown in Table 1. From the period of July-August 2020, there were 456 confirmed data on COVID-19 patients in Primasatya Husada Citra (PHC) Hospital Surabaya. The patient's mean age was  $39.97 \pm 16.24$  years. Most patients were reported to be in the 21-30 year age group, with 122 patients (26.75%) and 101 patients (22.14%) in the 31-40 year age group. Two hundred seventeen patients (47.59%) reported as mild to moderate, with 68 patients (39.30%) from this group aged 21-30. Patients with mild-moderate symptoms were more commonly reported in the 21-30 year age group (21.19%), and severe symptoms were commonly reported in the 51-60 year age group (30.30%). The distribution of disease severity by age group is shown in Figure 1. Spearman correlation showed a significant correlation between disease severity and age ( $r=0.35$ ;  $p=0.01$ ) (Table 2).

### Gender

Most of the disease severity was mild-moderate regardless of gender (47.58%), followed by asymptomatic (37.94%), as shown in Table 1. Spearman correlation test between gender and disease severity showed men are correlated to asymptomatic cases while women are correlated to severe cases with small size effect ( $r = 0.13$ ;  $p=0.01$ ) (Table 2).

### Region of Domicile

In this study, patients were divided into 6 domicile areas as North Surabaya, East Surabaya, West Surabaya, South Surabaya, Central Surabaya, and Outside Surabaya. Of the total of 456 patients, 42.54% came from Outside Surabaya. Within Surabaya City, where the hospital is located,

16.23% of patients resided in East Surabaya, followed by North Surabaya (15.79%) (Table 1). Region of domicile is found to be negatively correlated with more severe symptoms ( $r=-0.15$ ;  $p=0.01$ ) (Table 2).

**Table 1.**

Demographic and clinical characteristic of patients

Variable	N	%
<b>Characteristics</b>		
Age	$39.97 \pm 16.24$	
COVID-19 Prevalence among Inpatient cases	456	
<b>Sex</b>		
Men	275	60.30
Women	181	39.70
<b>Region of Domicile</b>		
North Surabaya	72	15.79
East Surabaya	74	16.23
West Surabaya	40	8.77
South Surabaya	42	9.21
Central Surabaya	34	7.46
Outside Surabaya	194	42.54
<b>Disease Severity</b>		
No Symptoms	173	37.94
Mild-Moderate	217	47.59
Severe	66	14.47
Total	456	100.00

### Clinical Manifestation

Among 456 confirmed COVID-19 cases in our study, the most common symptoms reported on admission were cough (37.94%), fever (29.38%), malaise (28.07%), and dyspnea (25.00%), as shown in Table 4. Meanwhile, gastrointestinal symptoms such as nausea and vomiting, abdominal pain, and diarrhea were least reported.

### Comorbidity

The detailed data of comorbidities among patients are shown in Table 5. The most common comorbidities were diabetes mellitus (13.54%), hypertension (8.38%), and chronic obstructive pulmonary disease or COPD (5.48%). Significant correlation were found between degree of severity with diabetes mellitus ( $r=0.35$ ;  $p<0.01$ ), hypertension ( $r=0.25$ ;  $p<0.01$ ), and cardiovascular disease ( $r=0.15$ ;  $p<0.01$ ) (Table 2).

### Laboratory Findings

From 456 subjects, we collect complete laboratory results from 292 subjects. These laboratory findings were the complete blood count

examined on the first day of the patients' examination. Complete blood count results showed relative normal values including white blood cell count. Results are compared to the mean and standard deviation collected in this study; hemoglobin  $13.92 \pm 2.09$  g/dL, leukocyte count  $8.57 \pm 3.71 \times 10^9/L$ , eosinophil  $0.11 \pm 0.15 \times 10^9/L$ , basophil  $0.00 \times 10^9/L$ , stab  $0.01 \pm 0.02 \times 10^9/L$ , segment  $5.91 \pm 3.54 \times 10^9/L$ , lymphocyte  $1.89 \pm 1.14 \times 10^9/L$ , monocyte  $0.61 \pm 0.31 \times 10^9/L$ , red blood cell  $4.97 \pm 0.84 \times 10^9/L$ , hematocrit  $41.32 \pm 6.39\%$ , platelet count  $287.10 \pm 125.97 \times 10^9/L$ , mean corpuscular volume (MCV)  $83.70 \pm 6.81$  fl, mean corpuscular hemoglobin (MCH)  $27.82 \pm 2.54$  pg, mean corpuscular hemoglobin count (MCHC)  $33.22 \pm 1.27$  g/dL, neutrophil to lymphocyte ratio (NLR)  $5.85 \pm 10.90$ , platelet to lymphocyte ratio (PLR)  $280.15 \pm 626.89$ . The correlation analysis of disease severity with neutrophil-to-lymphocyte ratio (NLR) ( $r=0.27$ ;  $p=0.01$ ) and platelet-to-lymphocyte ratio (PLR) ( $r=0.16$ ;  $p=0.01$ ) (Table 2). It has shown a weak association between those variables.

### Radiologic Findings

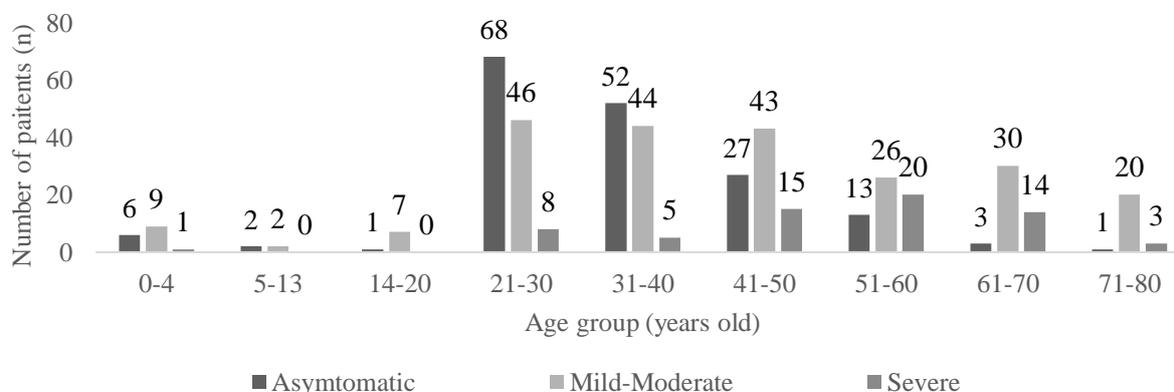
From 456 patients, the X-ray findings were recorded for 266 subjects. One hundred and ninety patients did not undergo chest X-ray examination because the patients refused or there was no indication to experience the test. The 190 patients with no data were not included in the analysis of the radiologic findings. According to BSTI COVID-19 chest X-rays classification, the radiographic findings were classified as normal, classic, indeterminate, and other results, as shown in Table 3. It was found that 51.13% of patients had classical X-ray findings indicating COVID-19.

Spearman's correlation test showed there was a significant correlation between chest X-ray findings and disease severity with a small effect size ( $r = 0.14$ ;  $p = 0.02$ ) (Table 2). Classic chest X-ray finding was the most common finding in all disease severity groups, as shown in Table 3. Sixty-two to twenty-nine percent of asymptomatic patients appeared to have an abnormality on their chest X-rays.

## DISCUSSION

### Age and Disease Severity

Our study involved 456 patients and was dominated by patients who belong to the age group of 21-30 years old. From the age group of 21-30 years old, 68 out of 112 patients were reported as asymptomatic. On the other hand, those who are in the age group of 51-60 tend to show severe clinical symptoms. The data in our study have similarities with the data reported in Zhejiang, China from January to mid-February 2020, namely the most reported age group was in the < 60 years age group. The possible reason according to this study, it was found that patients who had a history of traveling to endemic areas were more in the young age group than the old age group (53.68% vs 31.62%) (Lian et al., 2020). Another study at Shenzhen Third People's Hospital also reported that most COVID-19 patients were from the 21-40 years age group (38.30%) (Yuan et al., 2020). Furthermore, a study by Liu et al (2020) showed that patients who were > 60 years old had more severe clinical symptoms, this result was linear with our study which showed that patients with severe symptoms also tended to be patients in the age group approaching 60 years.



**Figure 1.** Disease severity distribution by age group

**Table 2.**

Spearman Correlation test between Variables with Disease Severity

Variable	r value	p value
Age	0.35	0.01
Gender	0.13	0.01
Region of domicile	-0.15	0.01
Diabetes mellitus	0.35	<0,01
Hypertension	0.25	<0.01
Cardiovascular disease	0.15	<0.01
Neutrophyl to lymphocyte ratio (NLR)	0.27	0.01
Platelet to lymphocyte ratio (PLR)	0.16	0.01
Chest X-ray findings	0.14	0.02

**Table 3.**

Patients' gender, the region of domicile, and radiologic findings with disease severity

Variable	Disease severity					
	Asymptomatic		Mild-moderate		Severe	
	N	%	N	%	N	%
<b>Gender</b>						
Men	116	67.05	128	58.99	31	46.97
Women	57	32.95	89	41.01	35	53.03
<b>Region of Domicile (Surabaya)</b>						
North	19	10.98	38	17.51	15	22.72
East	32	18.49	34	15.67	8	12.12
West	7	4.05	25	11.52	8	12.12
South	15	8.67	20	9.22	7	10.61
Central	6	3.47	21	9.67	7	10.61
Outside	94	54.34	79	36.41	21	31.82
<b>Radiologic Findings*</b>						
Normal	23	37.70	36	23.68	7	13.20
Classic	27	44.26	75	49.34	34	64.15
Indeterminate	10	16.39	34	22.37	11	20.75
Other features	1	1.65	7	4.61	1	1.90
No radiological tests were performed	112	-	65	-	13	-
Total	173	100.00	217	100.00	66	100.00

\*266 of 456 patients underwent chest X-ray examination; 190 patients were not included in the radiologic findings data analysis.

**Table 4.**

Clinical manifestation of patients on admission

Clinical manifestation	N	%
Fever	134	29.38
Cough	173	37.94
Dyspnea	114	25.00
Rhinorrhea	68	14.91
Sore throat	45	9.86
Headache	72	15.78
Malaise	128	28.07
Myalgia	66	14.47
Nausea or vomiting	98	21.49
Abdominal pain	51	11.18
Diarrhea	24	5.26
Anosmia	55	12.06

**Table 5.**

Patients' comorbidities

Patient's Comorbidities	N	%
Diabetes Mellitus	44	13.54
Hypertension	28	8.38
Cardiovascular disease	12	2.63
COPD	25	5.48
Liver failure	21	4.61
Renal failure	3	0.65
Immune system abnormality	3	0.65
Malignancy	1	0.29

**Gender**

Previous studies in China show that men were more perceptible to COVID-19 infection than women. Men also tend to have more severe

symptoms than women due to a higher rate of ACE2 receptors in men (Li et al., 2020). More than half of the patients in our study were men with a higher percentage of mild to moderate symptoms than women (58.99%). However, severe symptoms are mainly found in women (53.03%). There are three possibilities of the cause. First, women are more susceptible to autoimmune disease due to higher levels of estrogen, two X chromosomes, and X-linked miRNAs that cause the production of immune response more considerably generate more cytokines and promote TH1 cells responses than men.

Meanwhile, patients with COVID-19 had a high percentage of cytokines which activated TH1 and positively correlated with disease severity. Second, the culture in Indonesia, especially Java, indicated that men are the decision-maker in the family and women do the household chores. Quarantine increases women's workload as men and children spend more time at home and demand more attention. The men's ego prevents family members from finding health services when the symptoms are not in the severe stage. Third, women patients in our study had more comorbidities than men, even though not positively correlated (Huang et al., 2020; Ortona et al., 2016). Further research is needed to determine the cause.

### **Clinical Manifestation**

Cough (37.94%) and fever (29.38%) were the most common symptoms reported in our study. These findings were similar to a few previous studies conducted in China and New York City. Myalgia was commonly reported in those studies, but it was less widely reported in our study (14.47%) (Huang et al., 2020; Wang et al., 2020). Unlike the study in China, dyspnoea was commonly reported in our study (25.00%), similar to the finding in New York City. We had a consistent result with a previous study that gastrointestinal symptoms were less reported than other symptoms (Goyal et al., 2020). Based on studies in Indonesia, cough, fever, and dyspnoea were also the most common symptoms reported. Less common gastrointestinal symptoms and anosmia were the least reported (Karyono & Wicaksana, 2020). Based on these data, there were many variations of clinical manifestation among studies. Therefore, we assume that it is difficult to speculate why these variations appear, and it should be analysed further to understand the disease better.

### **Comorbidity**

The most common comorbidities that were found in our study are diabetes mellitus (13.54%), hypertension (8.38%), and chronic obstructive pulmonary disease or COPD (5.48%) (Figure 3). These data have similar results with a meta-analysis study by Sanyaolu et al (2020) that performed from January to April 20, 2020. This research showed that patients with COVID-19 have comorbidities, such as hypertension (15.78%), cardiovascular and cerebrovascular disease (11.69%), and Diabetes Mellitus (9.37%) were likely to increase the disease severity.

In our study, COPD becomes the three highest comorbidities. It might be due to the high prevalence of active smokers in Indonesia. Patients with COPD had worse disease severity compared to patients without COPD. According to WHO, active smokers based on sex, the prevalence was higher in males than females (67.41% vs 4.53%). The age group of 60 years old or younger was the most people that smoking (Suhendro, Santoso, Riswari, & Sudjana, 2017). Even though the cardiovascular disease was the fifth most common comorbidities in our study (2.63%), the disease progression was worst in patients that obtained diabetes mellitus ( $p < 0.01$ ), hypertension ( $p < 0.01$ ), and cardiovascular disease ( $p = 0.01$ ).

According to Sanyaolu et al (2020), multiple comorbidities are associated with the severity of disease progression in a patient with COVID-19. They found that patients with cardiovascular conditions have poorer outcomes. Patient with Diabetes Mellitus who has more inadequate blood glucose control also had an increased mortality rate. COPD has been also associated with poor disease progression.

### **Region of Domicile**

The population density in North Surabaya is 67,164, East Surabaya is 75,715, West Surabaya is 33,521, South Surabaya is 90,318, and Central Surabaya is 83,727 (Surabaya's Central Statistics Agency, 2018). The confirmed COVID-19 case in Surabaya was obtained from the local governor's website. PHC hospital is one of the referral hospitals for COVID-19 located in Pabean, North Surabaya, and it is easily accessed via highway. These factors probably lead to a relatively high percentage of COVID-19 cases treated in PHC Hospital, especially the number of patients from North Surabaya (Surabaya City Government, 2020).

### Radiologic Findings

Chest X-rays (CXRs) are the most common performed investigation procedures in COVID-19 suspected cases (Jacobi, Chung, Bernheim, & Eber, 2020). British Society of Thoracic Imaging (BSTI) has classified CXRs findings, based on European patients (Shi et al., 2020). BSTI COVID-19 CXR classified as normal; classic when having bilateral peripheral basal opacities; indeterminate that does not fit into classic or non-COVID description; other features when CXR having pneumothorax, pleural effusion, and pulmonary oedema (Durrani, Haq, Kalsoom, & Yousaf, 2020). Our study described the correlation between chest X-ray findings and disease severity of COVID-19 patients, with the majority of patients with severe disease (64.15%) had classical chest X-rays for COVID-19. However, seven (13.20%) patients with severe disease had normal CXRs on initial hospital admission. It was similar to the study by Hui et al (2020), which reported that four patients with severe disease who had no initial abnormalities on CXRs needed oxygen supplementation. Two patients required intubation and intensive care unit admission. They also found that from 69 patients with initial normal CXR, 15 patients developed an abnormal CXR during hospital admission with a median time of five (IQR, 3,70) days. The need for CT-scan as a diagnostic tool could be useful in minimizing the false-negative results from the CXR examination (Yoon et al., 2020).

Durrani, Haq, Kalsoom, & Yousaf (2020) reported 70.00% of COVID-19 patients had indeterminate chest X-rays, and only 23.00% of patients with classical findings of COVID-19. Another study by Hare et al (2020) showed classical findings found in 44.00% of COVID-19 patients, and 26.00% of patients showed indeterminate findings.

They also mentioned that the guideline for the “Classic” appearance of COVID-19 has excellent specificity and moderate sensitivity for pulmonary infection of SARS-CoV-2 (Hare et al., 2020). Gatti et al (2020) showed that patients confirmed by RT-PCR with severe disease could have normal CXR, it was suspected that the abnormal findings on CXR appeared a few days after symptoms, and it was more definite on day 12.

### Research Limitations

Our study was conducted as a retrospective study based on medical records data, and the laboratory findings were not explicitly analyzed. Thus, other follow-up studies aimed to explore

treatment outcomes, find a correlation between laboratory findings and disease severity, and follow-up chest X-rays findings as series are recommended.

### CONCLUSION

This study has provided insight into the COVID-19 patient profile in Surabaya. This profile included age, gender, clinical manifestation, and comorbidities distribution correlated with the disease severity. Disease severity is influenced by multi-factors. In the future, we will follow up this study, including exploring treatment outcomes, finding a correlation between laboratory findings and disease severity, and follow-up chest X-rays findings as series are recommended.

### CONFLICT OF INTEREST

The authors declare that there is no conflict of interest in this study.

### AUTHOR CONTRIBUTION

All authors declare that we were participating actively in this study and article writing and partly responsible for the content of the writing, including the preparation and writing of concepts, designs, analysis, or revision of the article. TE, NN, and BDN: Conceptualization, Methodology, Writing- Reviewing, and Editing. PLT: Supervision and Funding. NSE dan TD: Data curation and validation. KAH, AS, AFI, ACVG, CTKS, FE, GAR, NG, MFG: Investigation Software, Writing- Original draft, and, Visualization.

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