

Research Article

Description of Characteristics, Main Complaints, Duration of Treatment, Complications and Comorbidities in Covid-19 Patients at Tk.II Dustira

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Abstract.

The 2019 coronavirus disease was declared a pandemic by the World Health Organization in March 2020. By 2021, Indonesia had a total of 4,262,720 cases and 142,560 deaths. By 2021, the total number of confirmed COVID-19 cases grew to 4,262,720. Since the deaths due to the coronavirus amounted to 144,094, clinical manifestations in patients with COVID-19 have a wide spectrum, ranging from no to severe symptoms. Most patients have symptoms such as fever, cough, sneezing, and shortness of breath. Age, gender, accompanying diseases, clinical symptoms, and laboratory parameters are all related to the duration of treatment for COVID-19 patients; comorbidities can cause complications such as hypertension, heart disease, chronic kidney disease, and chronic lung disease. The research draft used in this study is descriptive. Previous research showed that the age of most participants (55%) was 50 years and 59% were male, 91% had respiratory complaints, 90% had a respiratory cough, 94% had a non-respiratory fever, the treatment length was 6–11 days in 68%, bronchopulmonary pneumonia as a complication was seen in 43%, and comorbid hypertension was reported in 35%. The results of the study showed that elderly patients are at greater risk of getting infected with COVID-19, and respiratory complaints are the most common because COVID-19 attacks the reproductive organs, and fever is a manifestation of the infection of the body with the virus. Hypertension is the most common comorbidity that causes the activation of COVID-19 caused by ACE 2.

Keywords: Covid-19, primary complaint, treatment length, complication, comorbid

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1. Introduction

The World Health Organization (WHO) has designated the coronavirus disease 2019 (Covid-19) pandemic since March 2020, and has resulted in 1,521,252 cases and 92,798 deaths across the globe. In Indonesia, cases of Covid-19 were recorded until May 18, 2020, with 18,010 confirmed positive cases and 1,191 deaths [1].

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In 2021, Indonesia achieved a total of 4,262,720 confirmed cases and 142,560 deaths. Graph data always shows an increase in the number of confirmed cases every month. This is due to the high mobility of the Indonesian people who celebrate the New Year in January 2021 and Eid al-Fitr in May 2021 and the emergence of a new variant, the Delta variant, is considered to contribute to an increase in the number of confirmations [2].

In 2021 in West Java, confirmed cases of Covid-19 have reached 4,262,720 infected people. Meanwhile, 144,094 people died due to the coronavirus, and 4,292 were still sick, and 4,114,334 people were declared cured. Dustira is one of the Covid-19 referral hospitals for the cities of Bandung and Cimahi, Dustira Hospital is a reference for handling West Java Covid-19 cases because Dustira Hospital has 349 Covid-19 patient care beds. In 2021 Dustira Hospital handled 527 Covid-19 cases [3].

Most patients infected by coronavirus have symptoms such as fever, coughing, sneezing, and shortness of breath. Some other symptoms can be found productive cough, sore throat, headache, myalgia and arthralgia, chills, nausea and vomiting, nasal congestion, diarrhea, abdominal pain, hemoptysis, and conjunctival congestion [4]. Patients with severe primary complaints usually develop heart and lung complications. This is because both of these organs have ACE-2 receptors. Both organs from Covid-19 can cause Acute Kidney Injury, this is because the kidneys have ACE-2 receptors [5].

Age, sex, comorbidities, clinical symptoms, and laboratory parameters are all factors that can affect the length of stay of Covid-19 patients [6].

Comorbidities that can lead to complications such as hypertension, heart disease, chronic kidney disease, and chronic lung disease [7]. Deaths from Covid-19 infection with the highest comorbid order were diabetes mellitus 32.5%, kidney 26.5%, cardiovascular 11.3%, cancer 10.6%, and chronic obstructive pulmonary disease (COPD) 6.6%. This suggests that diabetes mellitus is a comorbid that can cause the highest percentage of deaths in patients with the highest percentage of comorbidity [8].

Coronavirus is a single-chain and positive-chain RNA virus belonging to the coronaviridae family which is divided into subfamilies according to serotype and genotype characteristics which include α , β , γ and δ . Four main structural proteins are found in coronavirus particles: spike protein (S), membran (M), envelope (E), and nucleocapsid (N). All of these proteins are encoded on the viral genome's 3' end [9].

This virus is spread by patients via droplets or aerosol particles that enter the airway. The virus binds to the ACE-2 receptor on the plasma cell membrane of humans, which is

the main factor in infecting its host species. In cells, these viruses copy genetic material and proteins to form new virions on the cell surface. Furthermore, this virus will release RNA genomes into the cytoplasm and golgi of cells, which will then be translated into two lipoproteins and structural proteins so that it can replicate. The virus is then released from the infected cells through exocytosis. It can infect kidney cells, liver cells, heart, testines, T lymphocytes, and the lower respiratory tract. When the virus enters a cell, it presents the viral antigen to the Antigen Presentation Cell (APC). T cells and B cells mediate the humoral and cellular immune systems [10].

After transmission, the virus enters the upper airway and replicates in the epithelial cells of the upper airway, then spreads to the lower airway. In acute infections, viral decay occurs in the airway, and the virus may remain decayed in gastrointestinal cells after healing. The virus incubation period is about 3 to 7 days [11].

Respiratory exposure that carries the infectious virus is the main way people get infected with SARS-CoV-2. Other ways of transmission include contact and air transmission. Viruses released in respiratory secretions (like coughing, sneezing, and talking) can infect others by touching their mucous membranes. WHO provides update pada July 9, 2020, states that airborne transmission can play a role in the spread of Covid-19, especially in closed spaces. WHO emphasized the importance of social distancing and wearing masks in prevention. WHO continues to support airborne transmission as a method of spreading disease [12].

There are other precautions that need to be followed, such as hand washing, wearing masks at all times, keeping a safe distance, avoiding crowds, and limiting mobility. When experiencing Covid-19 symptoms, individuals should self-isolate right away and perform a nasopharyngeal swab examination [13].

2. Method

2.1. Research design

In this study, the research design was descriptive. The sampling technique was accidental, and the data used was secondary data from 96.04 medical records of Covid-19 patients in 2021, rounded up to 100.

In this study, patients who have been confirmed to have Covid-19 and are currently undergoing treatment at TK.II Dustira Hospital and have moderate severe symptoms

were excluded. Exclusion criteria for this study included medical records from Covid-19 patients that were incomplete, damaged, or illegible in terms of main complaints, treatment duration, complications, and comorbidities.

2.2. Place and time of research

This research was carried out at Dustira Cimahi Hospital from October 2022 to December 2022.

2.3. Research procedure

The medical records of Covid-19 patients receiving care at Dustira Hospital were examined first by the researchers. Samples were then gathered in accordance with the inclusion and exclusion criteria. Subsequently, the information is entered and examined using SPSS statistical software.

2.4. Research analysis

Univariate analysis was performed to calculate the number, percentage (proportion) for the characteristics of each study subject and research variables (characteristics, main complaints, duration of treatment, complications and comorbidities).

2.5. Research aspects

The ethics committee of Dustira Hospital has granted permission for this research, and has obtained permission for the collection of medical record data at Dustira Hospital with the letter number Etik.RSD/006/I/2023.

3. Results and discussion

The study was conducted in January 2022. The object of research is the Medical Record of Dustira TK.II Cimahi Hospital which fulfils the inclusion and exclusion requirements. The number of respondents obtained by researchers amounted to 100 medical records where the amount of data obtained was in accordance with the plan of the researcher.

3.1. Characteristics of research subjects based on age and gender

TABLE 1: Features of research subjects at TK.II Dustira Hospital in 2021: Distribution by age and gender in Covid-19 patients.

Characteristic	n	%
Age		
<20 years	2	2
20-35 years	13	13
36-50 years	30	30
>50 years	55	55
Gender		
Man	59	59
Woman	41	41
Total	100	100

Table 1 shows that the lowest number of patients is <20 years old 2 people (2%), and the highest number of patients in 2021 aged >50 years is 55 people (55%).

Mohitosh Biswas et al.'s 2020 study in China found that age factors, which categorise people into two age groups—less than 50 and beyond 50—were connected to death. The study's findings indicate that the age group over 50 who contract Covid-19 has a higher mortality risk than the age group under 50 [14].

In addition, elderly individuals have taken many drugs or consumed several types of drugs at the same time in comorbid therapy efforts that result in decreased organ function. Excessive expression of ACE2 may occur in patients over 50 years of age due to impaired immunity, impaired organ function. Comorbidities and many other causes that increase the risk of death [15].

Table 1 displays the majority of Covid-19 patients' genders at TK.II Dustira Hospital in 2021 with 59 men (59%) and 41 women (41%).

According to a meta-analysis study, men are 28% more likely than women to get Covid-19 infection. This finding links sex with the risk of infection [14]. It is well known that men express more of the sexual hormone ACE2, which is linked to an increased risk of SARS-CoV-2 infection in men. Smoking is a lifestyle choice that puts males at increased risk of contracting the corona virus and maybe dying [15].

TABLE 2: Overview of the main grievances raised by TK.II Dustira Hospital Covid-19 patients in 2021.

Main Complaints	n	%
Respiratorik	91	91
Non-Respirator	9	9
Total	100	100

TABLE 3: Description of the most respiratory complaints raised by TK.II Dustira Hospital Covid-19 patients in 2021.

Respiratory Complaints	n
Cough	90
Shortness of breath	89
Chest pain	2

TABLE 4: Description of the most non-respiratory complaints raised by TK.II Dustira Hospital Covid-19 patients in 2021.

Non Respiratory Complaints	n
Fever	94
Headache	32
Liquid defecation	2
Loss of consciousness	1
Nausea, vomiting	15
Slogans	28
Anosmia	3

3.2. Overview of the main complaints in Covid-19 patients

Table 2 shows the majority of patients with Covid-19 in TK.II Dustira Hospital in 2021 with 91 respiratory main complaints (91%) and 9 non-respiratory main complaints (9%).

Prior studies carried out in 2020 by Xiaoneng Mo in China showed that the lungs are the organs most affected by Covid-19. These diseases include fibrous proliferation of the alveolar septum, diffuse alveolar epithelial destruction, capillary damage/hemorrhage, hyaline membrane formation, and pulmonary consolidation, all of which can impair a person's ability to function [16].

Tables 3 and 4 show that the most respiratory complaints are cough 90 people (90%), complaints of shortness of breath 89 people (89%) and complaints of chest pain 2 people (2%). For the main non-respiratory complaint, the most complaints are fever

as many as 94 people (94%) and the least is a decrease in consciousness, which is 1 person (1%).

According to data from the Republic of Indonesia's Ministry of Health 2020, fever, coughing, lethargy, and shortness of breath are the most typical signs and symptoms of COVID-19 infection. Fever and respiratory problems were the most often reported symptoms in the Wuhan study [17].

The most common sign is fever. 43.8% of patients had a fever at admission, however the percentage of patients who arrived at the hospital partially without a fever rose to 88.7% while they were there. Enhanced cytokine activity releases $TNF\alpha$, $IFN-\gamma$, IL 1, IL4, and IL 6 at the proper concentrations, triggering both nonspecific and cellular immunity [18].

3.3. Overview of treatment duration in Covid-19 patients

TABLE 5: Overview of the length of treatment based on the main complaints raised by TK.II Dustira Hospital Covid-19 patients in 2021.

Duration of Treatment	n	%
<6 days	9	9
6-11 days	68	68
>11 days	23	23
Total	100	100

Table 5 shows the average length of treatment for patients with Covid-19 in TK.II Dustira Hospital in 2021 was 10 days with a minimum length of treatment of 3 days and a maximum of 21 days and mostly patients with Covid-19 in TK.II Dustira Hospital in 2021 with a length of treatment of <6 days as many as 9 patient (9%), 6-11 days as numerous as 68 patient (68%) and >11 days as numerous as 23 patient (23%). The most treatment duration is 6-11 days of treatment with a total of 68 people (68%).

There are several studies conducted by Rizka Fahmia et al. in Indonesia in 2020 saying that significant risk factors for the length of treatment are age, gender and comorbidities owned by patients. Especially in male patients, aged over 45 years and have comorbid obesity, hypertension and asthma [19].

TABLE 6: Overview of the form of complications raised by TK.II Dustira Hospital Covid-19 patients in 2021.

Complications	n	%
Bronchopneumonia	43	43
Heart Disorders	24	24
Kidney Disorders	11	11
ARDS	11	11
Hepatic Disorders	7	7
Electrolyte Disturbance	2	2
Stroke	2	2
Total	100	100

3.4. Overview of complications of Covid-19 patients

Table 6 reveals that in 2021, there were 43 patients (43%) with problems from pneumonia at TK.II Dustira Hospital, while there were only 2 patients (2%), who had difficulties from stroke and electrolyte disorders.

Bronchopneumonia covid-19 often occurs in both lung organs, considering that the covid virus can infect quickly. A comparative study in America conducted by comparing the condition of patients with covid bronchopneumonia with other pneumonia also reinforces this fact. When compared using CT scans and lab tests, results show that most covid bronchopneumonia will attack both lungs instead of one [20].

The SARS-CoV-2 coronavirus is the source of Covid-19, a condition that can harm heart muscle and impair cardiac function. Cells in the heart have Angiotensin Converting Enzyme-2 (ACE-2) receptors, to which the coronavirus attaches before entering the cell. Heart damage can also be caused by high levels of inflammation circulating in the body. As the immune system fights the virus, the inflammatory process can damage some healthy tissue, including the heart. Coronavirus infection also affects the inner surface of veins and arteries causing inflammation of blood vessels, damage to very small blood vessels (capillaries), and blood clots, all of which can disrupt blood flow to the heart or other parts of the body [21].

TABLE 7: Overview of comorbid factors raised by TK.II Dustira Hospital Covid-19 patients in 2021.

Comorbid	n	%
Hypertension	35	35
DM	19	19
Heart Disorders	13	13
Limfoma post chemo	1	1
Meningitis	1	1
Indigestion	8	8
Kidney Disorders	4	4
Neurological disorders	3	3
Dengue	1	1
Old Age	12	12
Pregnant	2	2
Overweight	1	1
Total	100	100

3.5. Description of comorbid factors in Covid-19 patients

Table 7 shows that most Covid-19 patients at TK.II Dustira Hospital in 2021 with comorbid factors of Hypertension were 35 people (35%) and the least with comorbid factors of Post chemo, Meningitis, Dengue and Overweight Lymphoma each 1 person (1%).

Some studies say hypertension has a relationship with COVID-19, where hypertension will aggravate Covid-19 infection and can even be a pathogenesis of Covid-19 infection. This virus will bind to Angiotensin Converting Enzyme 2 (ACE2) in the lungs. Several studies state that the severity and mortality of Covid-19 are influenced by several comorbid diseases, one of which is hypertension, where existing hypertension can aggravate 2.5 times COVID-19 [22].

The position of hypertension as the most comorbids in Covid-19 patients is supported by research conducted in 2020 and it was found that hypertension became the most comorbid, namely 21.1%. In hypertensive patients suffering from Covid-19, there is an increase in ACE-2 expression which causes high susceptibility to Covid-19 infection, especially treatment with angiotensin II receptor blockers (ARBs) and angiotensin-converting enzyme inhibitors (ACEi). This can lead to worsening and severity of Covid-19 infection due to increased binding of the virus to target cells that utilize ACE-2 [23].

At 33.6%, diabetes mellitus is the second most common concomitant condition among Covid-19 patients in Indonesia. Covid-19 attaches itself to the surface of human body

cells via ACE-2 receptor binding, which allows Covid-19 to enter the cell. Studies by Marko Marhl et al. demonstrated that ACE-2 receptor expression is elevated in diabetes situations. The higher expression of ACE-2 in individuals with both type 1 and type 2 diabetes mellitus provided additional evidence for the study [24].

4. Conclusion

Considering the findings of the studies that have been done, the results of Covid-19 patients with the most main complaints are respiratory complaints as many as 90 people (90%). Covid-19 patients carried out 6-11 days of treatment as many as 68 people (68%). The major complications in Covid-19 patients were Broncopneumonia as many as 43 people (43%). The major comorbid in Covid-19 patients is hypertension as many as 35 people (35%).

Looking at the results obtained by researchers with the most main complaints, namely respiratory complaints, health workers must prepare qualified facilities to handle the conditions experienced by patients so that there are no ongoing complications and worsen the condition of patients. Hospitals must also prepare a sufficient number of treatment rooms to treat patients. Make sure health workers are competent to handle complications and comorbidities experienced by patients to prevent further worsening.

Conflict of Interest

The author of this paper affirms that there is no conflict of interest in any of the scholarly publications we produce.

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