



Factors that influence the length of stay for Covid-19 patients in 5 Central Java Hospitals

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Abstract. In patient services with health insurance such as BPJS (Social Security Services Agency), the length of time a patient is treated greatly influences the costs obtained by the hospital, because the funding will be paid by BPJS after the patient has finished being hospitalized. This research aims to look for factors that influence the length of treatment for Covid-19 patients. This research method is quantitative research with a research instrument in the form of an observation guide in the form of a checklist with data sources as medical record documents of a number of inpatients, research variables include patient characteristics (age, gender), comorbid diseases, clinical data (shortness of breath, temperature, pulse, Respiratory Rate). The results of the research show that there is an influence of shortness of breath on the length of treatment with a p value of 0.003, there is an influence of Respiratory Rate/RR on the length of treatment for Covid-19 patients with a p value of 0.045, There is an influence of comorbid heart disease on the length of treatment for Covid-19 patients with a p value 0.016. There is no influence of the variables age, gender, temperature, pulse, hypertension and DM on the length of stay of Covid-19 patients in hospital.

Keywords: Covid-19, characteristics of Covid-19 patients, comorbidities Literature: 26 (2015-2022)

1 Introduction

Covid-19 began to spread at the end of December 2019 in China, more precisely in the city of Wuhan, resulting in a relatively high number of positive cases and deaths (1). This virus has shifted the entire world's outlook, causing a relatively high death rate, including Indonesia. The Covid-19 virus then spread throughout the world very quickly and reports of cases and deaths continued to increase. In the end, on January 30 2022, WHO declared Covid-19 a pandemic that threatens the entire world (2).

WHO decided that the Covid-19 incident was a Public Health Emergency of International Concern (PHEIC) on January 30 2020 and decided that Covid-19 was a pandemic on March 11 2020 (Ministry of Health, 2020) (3)

Covid-19 is a large family of SARS-CoV-2 viruses that cause disease in humans and animals. In humans, it generally causes respiratory tract infections, ranging from the common cold to shortness of breath. Covid-19 is an infectious disease caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) (4).

The transmission of Covid-19 is very fast, transmission can be through direct contact with people without symptoms (OTG) or from animals to humans. Someone who is more easily exposed to Covid-19 is someone who has direct contact with Covid-19 sufferers, active smokers, and someone who has comorbidities such as hypertension and diabetes mellitus (5).

The solution to dealing with the high number of Covid-19 is to implement a lockdown or restrictions on social activities in several areas where the number of confirmed Covid-19 is very high. Prevention is carried out to reduce the high rate of spread by increasing the body's immune system by consuming healthy food, washing your hands more, using masks, exercising and getting enough rest (6).

The Ministry of Health informs all citizens to take precautions against Covid-19 for each individual, including always wearing a mask when leaving the house, washing hands using 3 soaps or using hand sanitizer, avoiding physical contact such as holding other individuals. Knowledge and attitude factors have a big impact on the health of residents, where they play a crucial role in determining the success of programs in preventing the transmission of Covid-19. Clinical data or often called patient medical data is data that contains the diagnosis of the patient's disease, history of the patient's disease, physical examination, laboratory results, actions and treatment that will be given to the patient.

Covid-19 clinical data is based on anamnesis from the patient's travel history, clinical symptoms and diagnosis based on anamnesis and laboratory examination. Comorbid is a condition where the patient has accompanying diseases or other diseases besides the main disease. Comorbidities can be called complications. Patients who suffer from comorbidities are more susceptible to being infected with Covid-19 because their immune system is already weak, so they are more easily infected.

Covid-19 laboratory examination uses Reverse Transcriptase-Polymerase Chain Reaction (RT-PCR). The results of the patient's antibody detection are based on the patient's immunity which is carried out based on the antibody antigen method. Currently, WHO has determined that the Covid-19 laboratory examination method is RT-PCR as a method for detecting the genetics of patients exposed to Covid-19 (4).

The description of the characteristics of Covid-19 patients includes gender, age, length of treatment, results of supporting examinations, and the condition of the patient who has recovered. The characteristics of the clinical symptoms of Covid-19 vary greatly, starting from someone who is infected with Covid-19 but feels no symptoms. Most people who are infected will experience mild symptoms such as fever, cough and shortness of breath. However, Covid-19 in severe cases can cause or cause someone to experience acute respiratory failure and even lung complications.

Patients who are confirmed to have Covid-19 will be isolated in the nearest hospital or Covid-19 referral hospital. Patients will receive treatment as long as the Swab-PCR results do not show negative. Patients can be declared home if the Swab-PCR results are negative, and patients can also be declared home if they die. Patients with positive results will remain in the hospital undergoing treatment until the results show negative and until the doctor allows them to go home.

2 Methods

The type of research used in this research is quantitative research. This research aims to look for factors that influence the length of treatment for Covid-19 patients. The population in this study is medical record documents of Covid-19 patients who are isolated and undergoing treatment in hospitals. The total research sample was 427 medical record documents for patients confirmed with Covid-19 in 2021. The data collection technique used was observation. This study used 2 data sources from the medical record summary form for inpatient discharges and the integrated record sheet. Data processing using: data reduction, data presentation, and data verification. The way to analyze the data in this research uses statistical tests.

3 Results and Discussion

3.1 Results

Table 1. The influence of each variable on the length of stay for Covid-19 patients

p value	F	Conclusion
0,003	9,183	there is an effect of shortness of breath on the length of stay
0,045	4,039	there is an influence of Respiratory rate on length of stay
0,016	5,822	There is an influence of comorbid heart disease on the length of stay
0,478	5,505	There is no effect of age on length of stay
0,981	0,001	There is no effect of gender on length of stay
0,112	2,531	There is no influence on pulse rate with length of stay
0,193	1,707	There is no effect of temperature on

		length of stay
0,443	0,588	here is no effect of Diabetes Mellitus on length of stay
0,425	0,638	There is no effect of hypertension on length of stay

Based on table 1, the variables that influence the length of stay for Covid-19 patients are shortness of breath p value 0.003, comorbid heart disease p value 0.016 and RR p value 0.045.

3.2 Discussion

Based on the research results, it was found that there was an effect of shortness of breath on the length of stay in Covid patients with a p value of 0.003. These results are in line with research presented by Antara et al. In 2022, people who have a history of shortness of breath are 2.4 times more likely to be at risk than people who do not have a history of shortness of breath because people with a history of shortness of breath have lower immunity than people who do not have shortness of breath. (7) . In the research of Twilight et al. 2021 which was carried out in June-August 2021 also showed that there were patients who experienced symptoms of shortness of breath (66.7%) 39 while people who had no symptoms (33.3%) this shows that the symptoms of shortness of breath have a big influence on human infection with Covid-19. (8).

Based on the research results, it was found that there was an influence of Respiratory Rate (RR) on the length of stay of Covid patients with a p value of 0.045. The results of this study are in line with research by Ksm et al., 2020 which also found that the respiratory frequency or RR of Covid 19 patients was more than 30 per minute or above normal. (9) This statement proves that he is a Covid-19 patient

Based on the research results, it was found that there was an influence of comorbid heart disease on the length of stay of Covid patients with a p value of 0.016. Comorbid is a medical condition where people suffer from two or more diseases at the same time. (10)

Based on the research results, it was found that there was no influence of comorbid Diabetes Mellitus on the length of stay of Covid patients with a p value of 0.443. The results of the study are different from the research of Satria et al., with the results showing that patients who have comorbid diabetes have the most serious risk of death at BDH Hospital because patients who have comorbid diabetes have a 4,348 times higher risk of dying due to Covid19 (11) in Shang et al.'s research. 2021 said that patients who have comorbid diabetes mellitus are more susceptible to Covid-19

compared to non-diabetic patients. This research also shows that Covid-19 patients with diabetes mellitus have a shorter overall survival time than patients who do not have diabetes mellitus. (12) In the study Raden Muhammad Ali Satria, said that there are accompanying risk factors for patients dying from Covid-19. The highest number of comorbid cases was Diabetes, 37 patients (14.62%), then the second highest was hypertension, 11 patients (4.34%) (13)

Based on the research results, it was found that there was no influence of comorbid hypertension on the length of stay in Covid patients with a p value of 0.425.

This is in line with Isna Hikmawati's research with the highest comorbidity results being hypertension (49.8%), 31 followed by diabetes mellitus (35.1%) (14). In Dyana's research, Dyana also said that the most common comorbidities were hypertension, 23 people (30.7%) had a moderate degree, 8 people (47.1%) had a severe degree and 12 people (66.7%) had a critical degree (15). Not only that, in Raden Muhammad Ali Satria's research, he said that there were accompanying risk factors for patients dying from Covid-19. The highest number of comorbid cases was Diabetes, 37 patients (14.62%), then the second highest was hypertension, 11 patients (4.34%) (11)

Based on the research results, it was found that there was no influence on body temperature on the length of stay in Covid patients with a p value of 0.193. Celine Grace's research stated that it was found that around 98% of patients experienced high body temperatures above 38°C (16).

Based on the research results, it was found that there was no influence on the pulse rate on the length of stay in Covid patients with a p value of 0.112.

There is no influence of gender on the length of treatment for Covid-19 patients with p value of 0.981, this influences factors such as the human body's immune system, including food, environment, age, health conditions and use of medicines (17)

The results of Yaslina and Yunere's 2020 research show that women also tend to worry easily, so it is very possible that women are very susceptible to Covid-19 because anxiety can cause a person's immune system to decrease (18) Supandi's research results in Kotamobagu City showed that the highest percentage was female at 56% (19).

However, this is in contrast to research by M Biswas, et al, which explains that the results of a meta-analysis study linking gender with the risk of being infected with the Covid-19 virus show that men are around 28% more at risk of being infected compared to women. Comparable to the relationship between gender and mortality, it shows that men are 1.86% more at risk of dying compared to women (20). Research conducted by Sulantari & Hariadi also states that female patients have a faster chance of surviving/recovering from Covid-19 than male patients. (21) This is in line with research by Shani Talia gal-Ozo et al, which shows the results IFN gene expression in female MF tends to be higher than in male MF, thereby strengthening the immune response in women. (22)

There is no effect of age on the length of treatment for Covid-19 patients with a p value of 0.478. With increasing age, Covid-19 infections increase due to aging which has a negative impact on lung function and delays the activation of the immune system. Apart from that, elderly people are often negligent when maintaining health protocols, as a result increasing the risk of exposure to Covid-19. (23) . As the age of Covid-19 patients increases, the patients will be more susceptible to Covid-19.

(24) Ernawati Aeda's research results showed that in Pati Regency, the majority of Covid-19 recoveries were in the 46-59 year age group, namely 637 people (36.59%) (18). Not only that, in Warsi Maryati, et al.'s research, patients who returned alive were also dominated by the 20-60 year age group, 227 with a percentage of 45.30% (25). This is proven by research by Ping Lia, et al, which shows the results of univariate analysis aged 70 years or more have comorbid diseases such as hypertension, cardiovascular disease, COPD, chronic kidney failure, onset of dyspnea, and several laboratory index abnormalities associated with death. (26)

4 Conclusion

There is an influence of shortness of breath on the length of treatment with a p value of 0.003, there is an influence of Respiratory Rate/RR on the length of treatment in Covid-19 patients with a p value of 0.045, There is an influence of comorbid heart disease on the length of treatment for Covid-19 patients with a p value of 0.016. There was no influence of the variables age, gender, temperature, pulse rate, hypertension and DM on the length of stay of Covid-19 patients in hospital. It is recommended that Covid-19 patients who are hospitalized with symptoms of shortness of breath, have comorbid heart disease and abnormal respiratory rates receive special attention..

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