The influence of demography, travel history and comorbidity toward the mortality incidence due to Covid-19 in Semarang

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ABSTRACT

Original Article

Background: Semarang is one of the cities in Central Java with the highest positive number and mortality rate of Covid-19. It became the largest contributor to daily cases in Central Java. In general, the severity of Covid-19 in Semarang is 5.3% and increased to 24% in the elderly. Mortality Covid-19 was caused by various factors such as demographic and non-demographic factors.

Objective: This study aims to determine the impact of several risk factors of COVID-19 mortality in Semarang.

Methods: This is an analytical cross-sectional study. Data analysis was carried out analytically with a binary logistic regression test. The sample used was the total population of 32.555 confirmed positive from March 2020 to March 2021 registered in Semarang Health Office.

Results: The results demonstrated that mortality due to Covid-19 in Semarang was frequent in the elderly (27.3%), males (9.4%), had comorbidities such as diabetes mellitus (28.6%), kidney disease (43.5%), neuromuscular (36.4%), and cancer (29.3%), and accompanied by symptoms such as Dyspnea (18.1%), weakness/lethargy (19.9%), and fever (14.6%).

Conclusion: Age, gender, travel history, comorbidities (kidney, neuromuscular, cancer, and diabetes mellitus), and symptoms (fever, shortness of breath, and weakness/lethargy) are risk factors for mortality Covid-19 in Semarang.

Latar Belakang: Semarang merupakan salah satu kota di Jawa Tengah dengan angka positif dan kematian tertinggi Covid-19. Semarang menjadi penyumbang kasus harian terbesar di Jawa Tengah. Secara umum, tingkat keparahan Covid-19 di Semarang adalah 5,3% dan meningkat menjadi 24% pada lansia. Kematian Covid-19 disebabkan oleh berbagai faktor seperti faktor demografi dan non demografi.

Tujuan: Penelitian ini bertujuan untuk mengetahui dampak beberapa faktor risiko kematian Covid-19 di Semarang.

Metode: Ini merupakan penelitian potong-lintang analitik. Analisis data dilakukan dengan uji regresi logistik biner. Sampel yang digunakan adalah total populasi sebanyak 32.555 orang yang terkonfirmasi positif sejak Maret 2020 sampai Maret 2021 yang terdaftar di Dinas Kesehatan Kota Semarang.

Hasil: Hasil penelitian menunjukkan kematian akibat Covid-19 di Semarang lebih banyak terjadi pada usia lanjut (27,3%), laki-laki (9,4%), memiliki penyakit penyerta seperti diabetes mellitus (28,6%), penyakit ginjal (43,5%), neuromuskular (36,4%), dan kanker (29,3%) dan disertai gejala seperti sesak napas (18,1%), lemas/lesu (19.9%), dan demam (14,6%).

Kesimpulan: Usia, jenis kelamin, riwayat perjalanan, penyakit penyerta (ginjal, neuromuskular, kanker, dan diabetes mellitus) dan gejala (demam, sesak napas, dan lemas/lesu) merupakan faktor risiko kematian

Covid-19 di Semarang.

INTRODUCTION

The first case of pneumonia was detected in Wuhan, Hubei, China, at the end of 2019. This infectious disease is caused by a new type of virus from the Coronavirus family and has never been previously identified in humans.[1] This disease is called the coronavirus disease 2019 (Covid-19), later declared by World Health Organisation (WHO) as a global pandemic on March 11, 2020.[2,3] Covid-19 is caused by the Severe Acute Respiratory Syndrome Coronavirus (SARS-Cov2). Infection due to SARS CoV-2 causes signs and symptoms such as fever, cough, shortness of breath, and acute respiratory distress.[1] The average incubation period of Covid-19 is 5-6 days, with the longest incubation period being up to 14 days. In severe cases, infection from Covid-19 can lead to kidney failure, acute respiratory syndrome, and even mortality.[4]

The spread of Covid-19 occurs very quickly since the virus can be transmitted through droplets from someone who is confirmed positive. Until now, Covid-19 cases have covered almost all countries, including Indonesia. Daily cases were still increasing until June 2020 in Indonesia. As of June 26, 2021, the total number of confirmed cases in Indonesia was recorded at 2,093,962, with a higher severity and mortality rate than global at 3.5%, while globally, it was only at 1.96%. Cases are dominated by 3 provinces on the Java island, namely DKI Jakarta, West Java, and Central Java.[5] Semarang is one of the cities in Central Java with the highest positive cases and Covid-19 mortality rate, making it the largest contributor to daily cases in this province. The severity and mortality rate of Covid-19 in Semarang City was 5.3% and an increase of 24% among the elderly.[6]

Mortality Covid-19 is caused by various factors such as demographics and non-demographics (clinical factors, environmental factors, and health services).[7] Demographic factors that can increase the risk of mortality from Covid-19 are gender and age. Infections due to Covid-19 were predominantly male and elderly.[8,9] A previous study showed a significant difference between gender with severity and mortality, in which male has a greater risk of experiencing the severity and mortality Covid-19 infection (OR=1.50, 95% CI =1.24-1.81 and P-value <0.0001)).[10] Furthermore, males have a high risk of being infected with Covid-19 and experiencing worsening of the condition if accompanied by comorbidities than females. A previous study in Wuhan, China, showed that older people (median age 61) were more at risk for severe COVID-19 infection.[11]

Clinical features that can increase the risk of severity and mortality include comorbidities suffered by patients such as hypertension, diabetes mellitus, cardiovascular disease, chronic obstructive pulmonary disease (COPD), and cancer.[12,13] A previous study in Mexico reported that comorbidities significantly influence the severity and mortality of Covid-19 (OR= 1.26, 95% CI=1.11-1.43).[7] Experienced symptoms can increase the risk of morbidity and mortality due to Covid-19. In Wuhan, China, symptoms such as shortness of breath and fatigue had a high problem of severity (P=<0.001).[11]

Based on the background, there are problems related to the mortality rate due to Covid-19 in Semarang City. Therefore, the risk factors that affect the mortality of Covid-19 in Semarang City must be evaluated. The data obtained can be used as material for making programs in the context of controlling Covid-19 cases and as a basis for conducting interventions and evaluations at the district level.

METHODS

This analytical cross-sectional study was carried out in Semarang City using secondary data provided by Semarang Health Office from March 2020 to March 2021. The population

was based on Covid-19 data in Semarang, including all confirmed positive patients through the reverse transcription-polymerase chain reaction (RT-PCR), antigen, and antibody tests. The population obtained was 34.276 participants (positive confirmed patients). The inclusion criteria were applied to patients who confirmed positive from all age groups, male or female gender, have travel history or not in the last 14 days, hospitalization or self-isolation or official residence, have comorbidities or not and have symptoms or not. Meanwhile, the exclusion criteria were missing data, double entry of data, and the data's name did not match the variables. Based on these criteria, 1721 confirmed positive patients were excluded, so the sample included was 32,555 patients who met the eligibility as samples in this study. The study ethic was approved by the Health Research Ethics Commission, Faculty of Public Health, Diponegoro University on November 29, 2021, with protocol number 376/EA/KEPK-FKM/2021.

The variables included demographic factors (age, gender, travel history), clinical factors (comorbidities and symptoms), mortality data, and the treatment place. As independent variables, the recorded comorbidities included hypertension, diabetes mellitus, cardiovascular disease, renal, neuromuscular, cancer, liver, COPD, asthma, and tuberculosis. Variables were categorized into two, <65 years and ≥65 years for age, as well as yes or no applied for comorbidity, symptoms, and travel history.

Statistical analysis was performed using SPSS 25.0. Univariate analysis was conducted to determine the frequency distribution of each variable displayed as numbers and percentages. Bivariate and multivariate analysis with binary logistic regression test (enter method) to determine demographic factors (age, gender, and travel history) and non-demographic factors (comorbid and symptoms in confirmed Covid-19 patients) on mortality due to Covid-19 was conducted as well.

RESULTS

Semarang is one of the cities with the highest positive cases and mortality in Central Java. This city consists of 16 sub-districts and 117 urban villages. Until March 2021, 34,276 positive cases were recorded, with a mortality rate of 2694. Twenty-nine health facilities were referrals for Covid-19 in Semarang City, consisting of class A to D health facilities.

Based on the data analysis, Table 1 shows that from March 2020 to March 2021, Semarang City had a mortality rate of 8% (2,612). Covid-19 cases were dominated by the age group <65 years (91.4%) and males (50.2%). Almost 16% had patients infected with Covid-19 with comorbidities. The most common comorbidities were hypertension (7.3%) and diabetes mellitus (6.8%). Infected patients have various symptoms, but the most common symptoms were fever (25.7%), cough (28.4%), and shortness of breath (18%).

Tables 2 and 3 show the results of variables that influence mortality due to Covid-19. About 28% of patients in the age group over 65 years infected died (p-value = 0.000, OR 3.55 95% CI = 3.18-3.95) and was dominated by the male sex group 10% (p -value= 0.000, OR 1.35 95% CI = 1.23-1.48). Travel history during the last 14 days before infection had a significant effect on increasing mortality (p-value = 0.000, OR 1.62 95% CI = 1.38-1.90). Patients infected with Covid-19 accompanied by comorbidities that significant with mortality Covid-19 were kidney disease (p-value=0.000, OR 3.28 95% CI=2.56-4.20), neuromuscular (p-value=0.000, OR 2.72 95% CI=1.80-3.94), cancer (p-value=0.000, OR 3.92 95% CI=2.63-5.84), hypertension (p-value=0,000, OR 1.35 95% CI=1.14-1.54), cardiovascular (p-value=0,000, OR=1.40 95% CI=1.18-1.67), and diabetes mellitus (p-value=0.000, OR 1.59 95% CI = 1.37-1.84). The most common symptoms experienced by patients were dyspnea (p-value = 0.000, OR 5.41 95% CI = 4.88-6.01), fever (p-value=0.000 OR 1.40 95% CI=1.26-1.55), and lethargic (p-value=0.000 OR 1.89 95% CI=1.57-2.27).

Table 1. Frequency Distribution of Covid-19 Patient Demographic Factors

Variable		Frequencies	(%)
Demographic factors			
Mortality Covid-19	Recover	29943	92.0
	Mortality	2612	8.0
	Total	32555	100.0
Age	<65	29745	91.4
	>65	2810	8.6
	Total	32555	100.0
Sex	Male	16334	50.2
	Female	16221	49.8
	Total	32555	100.0
Travel history	No travel history	20720	63.6
	Travel history	11835	36.4
	Total	32555	100.0
Non-demographic factors			
Comorbidity	Diabetes mellitus	2315	7.1
	Hypertension	2485	7.6
	Cardiovascular	1020	3.1
	Neruomuscular	173	0.5
	Kidney disease	345	1.1
	Cancer	149	0.5
	Liver	59	0.2
	Asthma	132	0.4
	Obstructive pulmonary disease	101	0.3
	Tuberculosis	45	0.1
Symptoms	Cough	9261	28.4
	Fever	8577	26.3
	Dyspnea	6064	18.6
	Cold	2073	6.4
	Vomiting	2863	8.8
	Sore throat	1489	4.6
	Diarrhoea	876	2.7
	Headache	2398	7.4
	Anosmia	1619	5.0
	Lethargic	1347	4.1

Table 2. Demographic and non-demographic factors against Covid-19 mortality

Demographic and non-demographic variable	Mortality Covid-19				Total		P-value
	Survive (N)	%	Mortality (N)	%	N	%	
Age							
<65	27901	93.9	1844	6.2	29943	100	0.000
≥65	2042	72.7	768	27.3	2612	100	
Sex							
Female	14774	90.4	1560	9.6	16334	100	0.000
Male	15169	93.5	1052	6.3	16221	100	
Travel history	18472	89.2	2248	10.8	20720	100	0.000
Comorbidity							
Diabetes mellitus	1653	71.4	662	28.6	2318	100	0.000
Hypertension	1889	76.0	597	24.0	2486	100	0.656
Cardiovascular	753	73.8	267	26.2	1021	100	0.158
Neuromuscular	110	63.6	63	36.4	173	100	0.000
Kidney disease	195	56.5	150	43.5	345	100	0.000
Cancer	106	70.7	43	28.9	150	100	0.000
Liver	45	76.3	14	23.7	59	100	0.265
Asthma	112	85.0	20	15.2	133	100	0.335
COPD	80	79.2	21	20.8	101	100	0.325
Tuberculosis	36	80.0	9	20.0	45	100	0.429
Symptoms							
Cough	7959	85.9	1302	14.1	9261	100	0.000
Fever	7307	85.2	1270	14.8	8577	100	0.000
Dyspnea	4495	74.1	1569	25.9	6064	100	0.000
Cold	1943	93.7	130	6.3	2073	100	0.001
Vomiting	2418	84.5	445	15.5	2863	100	0.704
Sore throat	1347	90.5	142	9.5	1489	100	0.008
Diarrhoea	748	85.4	128	14.6	876	100	0.364
Headache	2123	88.5	275	11.5	2389	100	0.085
Anosmia	1604	99.1	15	0.9	1619	100	0.000
Lethargic	1079	80.1	268	19.9	1347	100	0.000

Table 3. Unadjusted and ORs and 95% CI for Covid-19 mortality

Variables	Unadjusted			Adjusted		
	OR	95% CI	P-value	OR	95% CI	P-value
Age						
<65	1	Reff	0.000	1	Reff	0.000
≥65	5.691	5.173-6.260	0.000	3.551	3.187-3.956	0.000
Sex						
Female	1	Reff	0.000	1	Reff	0.000
Male	1.523	1.404-1.652	0.000	1.348	1.232-1.476	0.000
Travel history	1.410	1.222-1.626	0.000	1.624	1.386-1.906	0.000
Comorbidity						
Diabetes mellitus	5810	5.251-6.429	0.000	2.241	1.985-2.530	0.000
Hypertension	4.403	3.974-4.878	0.000	1.358	1.147-1.540	0.000
Cardiovascular	4.414	3.815-5.107	0.000	1.408	1.184-1.673	0.000
Neuromuscular	6.703	4.905-9.160	0.000	2.727	1.803-3.949	0.000
Kidney disease	9.295	7.483-11.545	0.000	3.283	2.561-4.209	0.000
Cancer	4.711	3.298-6.730	0.000	3.297	2.639-5.844	0.000
Liver	3.580	1.963-6.531	0.000	1.704	0.845-3.427	0.137
Asthma	2.055	1.275-3.313	0.003	0.950	0.407-1.613	0.857
COPD	3.025	1.868-4.900	0.000	0.898	0.511-1.576	0.707
Tuberculosis	2.872	1.382-5.970	0.005	1.120	0.495-1.535	0.786
Symptoms						
Cough	2.745	2.532-2.977	0.000	0.845	0.736-0.940	0.003
Fever	2.932	2.703-3.179	0.000	1.404	1.265-1.557	0.000
Dyspnea	8.517	7.827-9.267	0.000	5.418	4.884-6.010	0.000
Cold	0.755	0.629-0.906	0.002	0.732	0.594-0.902	0.003
Vomiting	2.338	2.094-2.610	0.000	1.124	0.905-1.202	0.082
Sore throat	1.220	1.022-1.458	0.028	0.733	0.592-0.908	0.004
Diarrhoea	2.011	1.660-2.437	0.000	0.928	0.743-1.158	0.507
Headache	1.542	1.351-1.760	0.000	0.925	0.785-1.090	0.354
Anosmia	0.102	0.061-0.170	0.000	0.163	0.096-0.275	0.000
Lethargic	3.059	2.658-3.519	0.000	1.894	1.578-2.273	0.000

DISCUSSION

Based on daily reports, Covid-19 cases in Central Java Province, especially in Semarang, had the most positive cases and the highest mortality.[14] The severity and mortality rate of Covid-19 in Semarang is fairly high, approximately 5.3%, and will increase in the elderly group by 24%.[6] Mortality due to Covid-19 infection in Semarang is dominated by the age group over 65 with the male sex. In addition, infected patients have different symptoms ranging from mild to severe, and some patients have comorbidities. Common symptoms include cough, fever, and shortness of breath, while the comorbidities infected patients suffer include diabetes mellitus, hypertension, cardiovascular disease, kidney disease, neuromuscular disease, and cancer.

Age affects the immune system. When people

get older, the production of leukocytes at the age of the spinal cord will decrease.[15] The results of this study found that mortality of Covid-19 was mostly found in the age group over 65 years. There is a significant association between a person's age and mortality due to Covid-19 in Semarang City (p-value = 0.0001). Elimian et al. reported the same finding that age is related to Covid-19 mortality (p-value = 0.001).[7] The study finding by Imam et al. showed that mortality due to Covid-19 infection increases at the age of 61-70 years, who had a 14.5 times greater risk of experiencing severity and mortality.[16] This result occurred due to physiological and immunological changes in the elderly that were in severe condition when infected with Covid-19. Thus, being older is a predictor of mortality.[17]

Gender is also one of the determinants of mortality due to Covid-19. The results of this study found that gender had a significant influence on Covid-19 mortality (p-value = 0.000). This finding is in line with the previous study by Elimian et al., which found that males were more at risk of mortality from Covid-19 infection (p-value <0.001).[7] This finding is supported by Goodman et al., who reported that the incidence of mortality due to Covid-19 mostly occurred in males (p-value <0.01).[18] A study by Cen demonstrated that males are more at risk of getting infected by COVID-19 due to differences in immunity, chromosomal, and hormonal factors.[19] In females, hormones and chromosomes are more protected from COVID-19 than in males because they have an X chromosome and the sex hormone progesterone has an important role in innate and adaptive immunity.[19]

Travel history also influences mortality due to Covid-19 for 14 days before getting the infection. The current study revealed a significant association between mobility or travel history and mortality due to Covid-19 in Semarang City (p-value 0.000). This finding is in line with Alahmari et al., which reported that travel history significantly influenced mortality from Covid-19 (p-value = 0.003).[20] Patients infected with Covid-19 due to travel history within 14

days have a 13.9 times greater risk of dying.[20] This result happens because previous mobility can cause the virus to spread faster from person to person.[21,22] This finding is contrary to the study in Nigeria, which showed negative results or no significant association between travel history and mortality from Covid-19 (OR 0.69).[7] This was due to several strict regulations as a condition for conducting travel, such as mandatory wearing a mask, always washing hands, maintaining distance, conducting PCR tests, and having vaccinated at least dose 1 at every country entrance and certain regional boundaries such as airports and ports so that people who will travel or after travelling outside the city further minimize the risk of being infected and experiencing a high fatality due to Covid-19.[11]

The findings in this study also reveal an association between comorbidities and symptoms in Covid-19 patients and mortality. Common comorbidities include diabetes mellitus, hypertension, cardiovascular disease, kidney disease, cancer, and others.[23] There is a significant association between diabetes mellitus and mortality from Covid-19 (p-value = 0.000). This finding follows Goodman et al. that comorbid diabetes mellitus significantly influences the severity and mortality due to Covid-19 infection, in which 3.64 times greater risk of experiencing fatality or mortality from Covid-19.[24-25] Diabetes mellitus can increase the risk of severe complications, including adult respiratory distress syndrome (ARDS) and multi-organ failure.[26] Hypertension is one of the most common conditions suffered by Covid-19 patients.[26] The results of the analysis showed that there was a significant association between comorbid hypertension and mortality due to Covid-19 (p-value=0,000OR = 1.358, 95% CI= 1,197-1,540). This finding is in line with a previous study which showed that as many as 53% of patients with comorbid hypertension increased mortality from Covid-19 (p-value = 0.001). As many as 3% of patients with hypertension can trigger an increase in pneumonia. Furthermore, hypertension is a

common comorbid suffered by Covid-19 patients and increases the incidence of ICU admission, leading to mortality.[26] Neuromuscular disease is also one of the risk factors associated with mortality (p-value=0.003 OR=1.99). Patients infected with Covid-19 with neuromuscular comorbidities have a 1.99 times greater risk of dying than non-neuromuscular patients. This finding is in line with Elisabeth et al. study, which showed that Covid patients with neuromuscular comorbidities had a 2.58 times greater risk of dying (HR = 2.58, 95% CI = 2.38-2.79).[27]

In addition, cardiovascular disease has a high tendency of 4.65 times greater to experience fatality due to SARS CoV-2 infection. This study showed significant association of cardiovascular disease with mortality Covid-19 (p-value=0,000 OR=1,408 95% CI= 1,184-1,673). This consequence is caused by the presence of the angiotensin-converting enzyme 2 (ACE 2) receptor, which is a SARS CoV-2 binding receptor in human cells. When the ACE2 receptor enters the pancreas and heart, it increases the risk of infection and causes severe disease.[28] Kidney disease also significantly affected mortality from Covid-19 (p-value = 0.000). A study in China showed that kidney disease significantly increased mortality from Covid-19 (p-value <0.001).[29] This finding is supported by Imam et al., who demonstrated that patients with comorbid kidney disease have 1.86 times greater mortality risk.[16] SARS CoV-2 virus that infects the kidneys can contribute to the spread of the virus in the body. The tract is a potential pathway for infection with SARS-CoV-2 and studies have shown that the kidney is one of the specific targets of the virus. The SARS CoV-2 virus accumulates in the renal tubules. Thus, an aggravated condition in kidney disease among Covid-19 patients can cause mortality.[26] The same thing happened in patients with cancer comorbidities, significantly increasing mortality from Covid-19 infection (p-value=0.000). This finding is in line with Yang et al., which showed that tumours significantly increased mortality from Covid-19 (p-value = 0.0009).[30] Cancer is one of the risk factors for the severity and mortality of Covid-19 because they often experience immunological deficiencies due to the disease they suffer from and the side effects of their treatment.[30,31]

This condition is different from patients who have comorbidities such as liver disease (p-value = 0.137), asthma (p-value = 0.857), COPD (p-value = 0.707), and tuberculosis (p-value = 0.786) which did not have a significant association on the incidence of mortality due to Covid-19 in Semarang. This study is in line with Shah et al., which showed that liver disease had no significant association with mortality from Covid-19 (p-value=0.55, OR=1.46).[32] Chhiba et al. showed asthma did not have a significant association on mortality due to Covid-19 (p-value = 0.413, RR = 0.96, CI = 0.77-1.19), because a decrease in the burden of inflammation in Covid-19 patients with comorbid asthma.[33] This finding is also supported by Ya Gao et al. that showed that tuberculosis did not have a significant relationship with the increase in mortality from Covid-19 (OR = 1.40, 95%CI: 0.10 to 18.93, P-value= 0.80).[34] This finding may be due to low viral resistance and tuberculosis treatment is quite effective as prevention to reduce the risk of Covid-19 severity.[34]

The reaction after being infected with the SARS CoV-2 is the emergence of symptoms such as mild or severe. Symptoms are caused by various factors such as age, immune conditions, and the presence or absence of comorbidities.[35,36] The most common symptoms suffered by Covid-19 patients in Semarang are lethargic (p-value=0.000, OR= 1.89), anosmia (p-value=0.000, OR=0.16), cough (p-value=0.000, OR =0.84), fever (p-value=0.000 , OR= 1.40), colds (p-value= 0.04, OR= 0.73), and shortness of breath (p-value=0.000, OR= 5,41) had a significant association on mortality from Covid-19. This finding is in line with Alizadehsani et al., which showed that symptoms such as anosmia, dry cough, fever, ageusia, and anorexia were predictors of mortality from Covid-19.[37] Shortness of breath was the main predictor of mortality from Covid-19. This consequence is caused by hypoxemia and a decrease in the patient's oxygen saturation to less than 90%.[38,39]

In contrast to other symptoms such as vomiting (p-value = 0.08, OR = 1.12), sore throat (p-value = 0.04 OR = 0.73), diarrhoea (p-value = 0.50 OR = 0.92), and headache (p-value = 0.35 OR = 0.92) has no significant association on mortality due to Covid-19. This finding is in line with a previous study that showed symptoms such as headache, diarrhoea, nausea, and vomiting were not associated with mortality from Covid-19 infection.[40]

The current study has limitations, such as the type of variables and the data quality. The variables used in this study are limited because they only use variables contained in the Covid-19 data for 2020-2021. Researchers could not control the quality of the data because the data was obtained from the Semarang City Health Office.

CONCLUSION

Based on this study's finding, it can be concluded that groups of patients dominate mortality due to Covid-19 over 65 years with the male sex. In addition, Covid-19 patients who died had a travel history. They were also accompanied by comorbid diabetes mellitus, hypertension, kidney disease, cardiovascular, neuromuscular disease, and cancer and had shortness of breath, weakness/lethargy, and fever symptoms. Furthermore, age, gender, travel history, comorbidities (kidney disease, neuromuscular disease, cancer, diabetes mellitus, hypertension, and cardiovascular) and symptoms (fever, shortness of breath, and weakness/lethargy) have a significant effect on increasing the incidence of mortality from Covid-19 in Semarang.

CONFLICT OF INTEREST

The difference between this study and previous studies lies in the additional variables used and the Semarang Covid-19 data, which had never been studied scientifically. The research methods used are also different. This study uses analytical cross-sectional study methods. A binary logistic regression statistical test (enter method) was applied in this study.

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