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Correlation of Factors Causing the Death of COVID-19 Patients and Enforcement of Regulations in Handling COVID-19 in the City of Bogor

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Abstract: The outbreak of the COVID-19 virus has attacked all countries in the world and become a serious concern, also in Indonesia. Indonesia is trying to fight the spread of the COVID-19 disease with various forms of regulations issued, including the Government, Central Government, and District/City Governments. This policy was carried out to anticipate and prevent the spread of the COVID-19 virus outbreak. The study aims to look at the policies that the Bogor City Government has implemented and empirically test the data on COVID-19 patients to determine the factors that can influence the death of COVID-19 patients. The results showed that almost all COVID-19 patients adhere to the health protocol set by the Bogor City Government, but COVID-19 patients who are elderly, male, and have comorbid disease have a high risk of dying.

Keywords: COVID-19; comorbid; dead due to COVID-19

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1. Introduction

Indonesia is one of the countries affected by the COVID-19 virus outbreak, and its spread is of great concern in solving crucial problems. In Indonesia, the first confirmed case of COVID-19 was in March 2020. Two Indonesian citizens were suspected of being infected from a meeting of a 31-year-old woman with a Japanese citizen who entered Indonesian territory at a dance club in Jakarta on February 14, 2020 (detikNews, 2020).

The beginning of the spread of COVID-19 by the World Health Organization (WHO) was determined and announced by Director-General Tedros Adhanom Ghebreyesus. He said that the current coronavirus was categorized as a global pandemic in an ongoing press conference. Tedros said the number of infections worldwide due to the coronavirus reached more than 121,000 (Utomo, 2020).

Since the coronavirus outbreak globally, researchers have conducted research. The results said that the coronavirus caused many deaths in several countries, and every effort was made to minimize the deaths that occurred. The method that is widely adopted is quarantine and social isolation. However, this could lead to a global economic recession (dos Santos et al., 2021).

Other studies say that this pandemic has had a considerable impact, with the consequences of the death of 35 million people in China and 25 million people in Europe; nurses and doctors have a higher possibility of risk because of interacting with patients (Bostan et al., 2020).

Another research in the health sector said that the case in Wuhan, China, in December 2019 was identified as not a common pneumonia disease but as a coronavirus genus. It first attacked a group of people interacting and visiting the food market in the Huanan sea (Peeri et al., 2020). Some state that (SARS-CoV)-2, a new RNA coronavirus from the same family as SARS-CoV, was identified in early January 2020 as the cause of the pneumonia epidemic affecting the city of Wuhan, the capital of Hubei province, which quickly spread throughout China. After infecting and causing the deaths of thousands of people in China, the virus then spread to Italy and other European countries, and the United States, with the number of new confirmed cases currently increasing every day (Pascarella et al., 2020).

Another opinion says that in breaking the chain of transmission of severe acute respiratory syndrome SARS-CoV-2, case testing, tracing, and quarantine of patient contacts have been widely carried out as the primary intervention in many countries. The policy was carried out to prevent secondary infections (individuals infected by the index case) and successfully used to prevent outbreaks in countries such as South Korea. In November 2020, UK policy stated that individuals traced to close contacts must be quarantined for up to 14 days (Quilty et al., 2021).

Some studies assume that epidemic growth occurs within the population. However, infection increases exponentially between individuals through contact, proximity, or individual footprints. The survey was conducted to predict COVID-19 statistics by presenting the forecasting solution proposed by the IT team in the Health sector for the COVID-19 epidemic in Brazil (Bernardo Gois et al., 2021). Effective use of information technology is needed to reduce the epidemic's impact. This study presents background information on basic concepts important for the proposed system, including mathematical epidemic models, decision-making in epidemics, visual analysis, data protection, and individual patient privacy (Karaarslan & Aydın, 2021).

Several countries provide COVID-19 conditions visualized in several tables and graphs, which show confirmed deaths and cure cases in various countries. The study also uses data sets of COVID-19 patients and predicts the spread of COVID-19 patients (Podder et al., 2021).

Symptoms of COVID-19 were first summarized and concluded by studying 41 positive patients whose symptoms were most often found, namely cough, fever, fatigue, and myalgia. (Munir et al., 2021). Other research also provides an overview of

the SEIAR model selection system based on existing facts and estimates the spread of the COVID-19 coronavirus in Italy. The spread of this disease is much wider and longer, with many people being infected (De Falco et al., 2021). Another study also stated that COVID-19 spreads from person to person through close contact and droplets produced by infected people during coughing, sneezing, or even while talking. People get the infection by touching a contaminated surface and then touching their eyes, nose, or mouth (Tharsanee et al., 2021).

The impact of developing COVID-19 cases on deaths varies across countries. It reflects the socio-demographic characteristics of the population, the extent and timing of the epidemic and response, the overall health status of the population, the resilience and agility of health care, social systems, and the effectiveness of social and economic safety nets that support the recovery of people in need during this pandemic (Kontis et al., 2020). From the study results, it was found that the vulnerability to death due to being affected by COVID-19 disease was a vulnerable group aged over 80 years (Ghosh & Dutta, 2021).

Efficient efforts made by the Government in terms of medical regulation, significant clinical trials, drugs, and vaccines should be developed and implemented. For this, scientific numbers and resources are indispensable. During this crisis, solidarity started to produce medical equipment and a lot to produce masks for textile companies to support health workers in dealing with the spread of COVID-19 (Kızrak et al., 2021). The focus of this study is to predict the survivability of infected people who are at risk of dying from COVID-19. In the United States and the United Kingdom, the risk of death is higher than in Asia (Acheme & Vincent, 2021). The steps taken are ordering citizens to stay at home, avoiding crowds, washing hands regularly, maintaining a distance of 1-2 meters, and being prohibited from touching their faces. These guidelines are strictly enforced to prevent the spread of COVID-19; voluntary compliance is important in preventing COVID-19 (Ullah et al., 2021).

In Indonesia, many studies have been carried out to improve the performance of the Government and organizations in dealing with several problems in health sector institutions to solve problems that occur in the field (Juwono & Damara, 2020). The Government of Indonesia issued a regulation on the Determination of Public Health Emergency. The determination of this status was encouraged due to the increasing number of COVID-19 viruses in the country every day. Another policy taken by the Government to suppress the spread of the COVID-19 virus is to issue a Government Regulation concerning Large-Scale Social Restrictions in the context of Accelerating the Handling of COVID-19. Therefore, the Ministry of Health issued Regulation of the Minister of Health Number 9 of 2020 regarding guidelines for large-scale Social Restrictions in Accelerating Handling of COVID-19.

The steps taken by the Government are campaigning for the use of masks in all elements of society, whether outside the home or in public spaces. Furthermore, the Government conducts contact tracing of positive cases treated using random or rapid tests (Purwanto, 2020). In addition, until January 27, 2020, the Bogor City Government issued 176 (one hundred and seventy-six) policies regarding COVID-19. This number is a testament to the consistency and commitment of the Bogor Government in preventing the spread of COVID-19. With a population of 1,064,698 people (Source: Department of Population and Civil Registration, Bogor City), the susceptibility to the COVID-19 virus outbreak is a very big risk.

The researchers will describe the regulatory policies issued by the Bogor City Government in preventing and overcoming the spread of COVID-19 and conducting empirical research on the factors that most likely affect death for COVID-19 sufferers in Bogor. Based on the results of the COVID-19 detective application in Bogor City, the number of patients is increasing day by day, so researchers need to provide an overview of what policies have been taken by the Bogor City Government in preventing the spread of COVID-19 by synchronizing regulations with the Central Government so that the settlement can be resolved. COVID-19 problems can be regulated in a regulation. Researchers also attempt to conduct empirical tests by looking at the

variables of factors that have a very large influence on the causes of death due to the COVID-19 virus in Bogor.

2. Methods

The research method used an analysis of regulatory (juridical) studies and empirical studies using a logit regression tool to analyze data on COVID-19 patients in Bogor City from March 2020 to January 202. This regulatory (juridical) study and the empirical study were carried out to prevent and tackle the spread of COVID-19 in Bogor. In regulations (juridical), researchers will provide an overview of the regulations that the Mayor of Bogor has issued in issuing several regulations that are in sync with the policies of the Central Government. Researchers also conducted an empirical study expected to determine the risk factors that influence the magnitude of the risk of death from COVID-19. Synchronization in enforcing regulations is expected to be in harmony with regulations in the Central Government. The Bogor City Government can take a stand in being aware of factors that can increase the risk of death due to the COVID-19 pandemic.

3. Results and Discussion

3.1. Research Studies

Research studies were conducted using regulatory (juridical) studies and empirical studies. The purpose of the regulatory review (juridical) is to unravel the regulations carried out by the Bogor City Government in preventing and controlling the spread of the COVID-19 virus outbreak and synchronize with the laws and regulations issued by the Central Government. While the empirical studies conducted can provide an overview of the factors that have a major influence on the increase in deaths due to the COVID-19 virus outbreak in Bogor. This study needs to be carried out to correlate the prevention and control of COVID-19 in Bogor City. It can be used as a policy basis for the Bogor City Government in enforcing health regulations and policies for the benefit of the people of Bogor City.

3.1.1.Juridical Studies

Prevention and control of COVID-19 is a top priority, and this problem can be done using enforcing regulations and health protocols. Regarding regulations in Indonesia regarding Communicable Disease Outbreaks, the aim is to protect the population from the catastrophe caused by the outbreak as early as possible. Arrangements in the effort to control the epidemic are carried out by conducting epidemiological investigations, examinations, treatment, care, and isolation of patients, including quarantine, prevention and immunity measures, the extermination of the causes of disease, handling of corpses due to epidemics, outreach to the public and other prevention efforts.

Based on the objectives of disaster management in Indonesia, one of them is to protect the community from the threat of disasters, aligning the existing laws and regulations. This regulation regarding disaster management gives authority to the Central and Regional Governments to be responsible for dealing with disasters. Determination of the status and level of national and regional disasters is determined by Central Government. At the same time, the Regional Government exercises authority, one of which is by establishing disaster management policies in their regions.

Enforcement of regulations in the field of Health states that the Government is obliged to protect its people from diseases and/or public health risk factors that can cause a Public Health Emergency. Indonesia, which has been affected by the epidemic, is an epidemic area. Suppose the stipulation and revocation are based on epidemiological considerations and the condition of the community. Based on

(Government Regulation Number 40 of 1991), these considerations become the basis for the minister to determine certain areas affected by the outbreak as outbreak areas.

In supporting the prevention and handling of COVID-19, the Indonesian Government has also issued a Government Regulation regarding Large-Scale Social Restrictions in the Context of Accelerating the Handling of Corona Virus Disease 2019 (COVID-19). Regulatory policies that the Bogor City Government has issued in order to be in sync with the Central government regulations can be legally inventoried as illustrated in Figure 1.

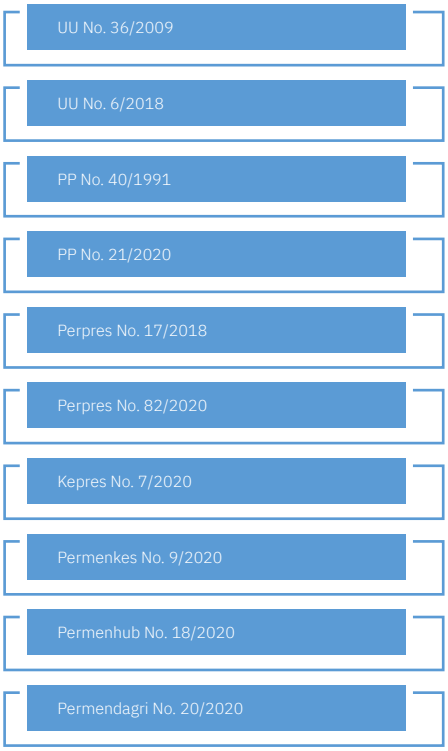

Figure 1. Inventory of Basic Government Regulations in the Prevention and Handling of COVID-19

The regulatory arrangements made by the Bogor City Government regarding COVID-19 are in sync with the regulations issued by the Government, namely by issuing Bogor City Regional Regulation Number 11 of 2018 regarding health administration. The implementation of health development is to protect the community. Therefore, the implementation of health is a shared responsibility between the Government, Provincial Governments, Regional Governments, the Private Sector, and the community.

The regulation on Large-Scale Social Restrictions in Bogor City has been amended 5 (five) times. Whereas juridically, the Bogor City Government has issued regulations to limit certain activities and the movement of people and/or goods in suppressing the spread of COVID-19, increasing anticipation of the development of escalation in the spread of COVID-19, strengthening efforts to handle health, and dealing with the social and economic impacts of the spread of COVID-19.

Regulations on sanctions have also been issued by the Bogor City Government in the Regulation on Technical Instructions for the Implementation of Large-Scale Social Restrictions Violation Sanctions in Handling Corona Virus Disease 2019 (COVID-19) in the City of Bogor, and the regulation accommodates several criteria for violating Health protocols, in the form of sanctions administration of Health protocols, mechanisms for implementing administrative sanctions, authority and delegation of administrative sanctions, sanctions for violations of Health protocols, and community participation as well as monitoring, evaluation, and reporting. With this regulation, it is hoped that it can provide a means of coaching to foster a sense of awareness and

compliance for the community to realize health order, especially in preventing the COVID-19 pandemic in the Bogor City Region.

Since August 29, 2020, the City of Bogor has been trying to break the chain of transmission of COVID-19, thus implementing the implementation of Micro and Community-Scale Social Restrictions in Bogor City according to indicators for determining the level of alertness and the results of contact tracing for positive cases. In these restrictions, it is regulated regarding restrictions on certain activities and the movement of people and/or goods in suppressing the spread of COVID-19, increasing anticipation of developments in the escalation of the spread of COVID-19, strengthening efforts to handle health, and dealing with the social and economic impacts of the spread of COVID-19.

In a regional implementation, to strengthen the regulations regulated by the Bogor Government, the Bogor Mayor's Decree regarding the Extension of Time for Social Restrictions in the community has been made several times, up to January 27, 2021, 16 (sixteen) changes have been made to the Mayor's Decree.) times since the last March with the stipulation of the Mayor of Bogor Decree Number 440.0801-2 the YEAR 2020 concerning the extension of the Sixteenth Large-Scale Micro and Community-Based Social Restrictions in Handling COVID-19 in the City of Bogor.

In the City of Bogor, the mapping of regulations issued by the Regional Government of the City of Bogor is 178 (one hundred and seventy-eight) policies consisting of Regional Legal Products (Regulation of Regional Heads as many as 3 points, Mayor Regulations as many as 20 (twenty) pieces, Mayor Decrees as many as 75 about 80 (eighty) points and circulars/instructions/letters of the Mayor/Deputy Mayor. From the regulatory data, the following can be inventoried as illustrated in Figure 2.

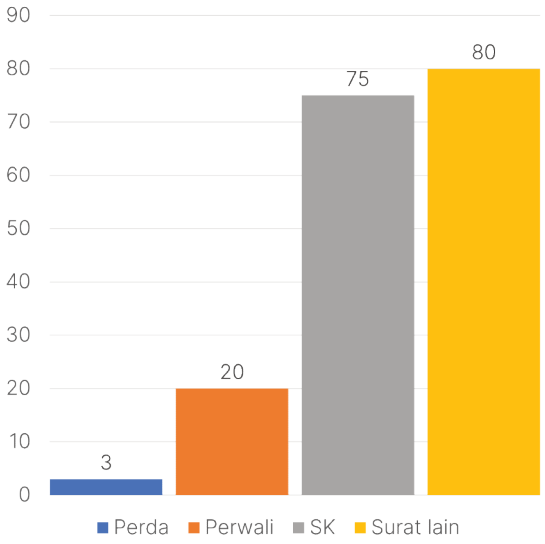

Figure 2. Inventory of Regional Government Regulations for the City of Bogor in the Prevention and Handling of COVID-19

Source: Legal Documentation and Information Network of Bogor City

Based on the regulatory provisions issued by the Government and followed up by the Bogor City Government, it is an indicator that the Bogor City Government is always in synergy with the Government and the Bogor City Government is serious about being committed to preventing and tackling the spread of the COVID-19 virus in Bogor City.

3.1.2.Empirical Studies

To strengthen and see the effect of the cause of death due to the outbreak of the COVID-19 virus in the city of Bogor, researchers also conducted empirical research based on theory and analysis results in the field. Research that affects the high mortality rate due to the Coronavirus outbreak is caused by several factors, namely

individual factors and factors from outside the individual. The internal factor that can influence the high mortality rate is age. Biologically, the elderly population will experience the aging process characterized by decreased physical endurance. This can cause the body to be more susceptible to certain diseases. In Indonesia, half of the elderly experience health complaints, and the percentage increases with increasing age (Ilpaj & Nurwati, 2020).

Gralinski & Menachery (2020) also conducted similar research; Li K. et al. (2020), in a study conducted by Harahap (2020), stated that several studies said that those aged over 60 years were more at risk of suffering from more severe COVID-19, especially over 80 years old (Harahap, 2020). According to Chen et al. (2020); Wang D et al. (2020); Yang X et al. (2020); Wang W et al. (2020), as cited in Harahap (2020) stated that advanced age and comorbidities were also reported to be risk factors for death (Harahap, 2020). Research conducted by Raden Muhammad at Bhakti Darma Husada Hospital (2020) reveals the age range and types of comorbidities or comorbidities that are most susceptible to affect the risk of death from the Coronavirus or COVID-19. Previous studies have proven that the causes of the high risk are factors that influence deaths due to the COVID-19 pandemic in Indonesia.

The study was conducted by researchers using data sources from the Bogor City Health Office (COVID-19 detective application), where data on COVID-19 patients from March 2020 to January 2021 amounted to 15,836 COVID-19 patient data. However, what can be done and meet the requirements for logit regression are 5,530 patients consisting of confirmed cured, probable recovered, and died are used by researchers. Meanwhile, for patients with confirmed conditions, discarded, close contacts are quarantined, the suspect is still sick, the suspect is still quarantined. The researcher will not use it because it is unclear whether the patient has recovered or died.

The variables that the researcher will use are the variable of the patient recovering or dying, the variable using personal protective equipment (PPE), the variable gender, the variable traveling abroad/out of the region, the age variable, the variable congenital disease, the smoking variable, the sub-district variable. The age variable consists of 7 (seven) age groups, namely age group 1 (age 0-10 years), age group 2 (age 11-20 years), age group 3 (age 21-30 years), age group 4 (31- 40 years), age group 5 (41-50 years), age group 6 (51-60 years), and age group 7 (60 years and over). Congenital disease variables consist of 6 groups, namely group 1 (patient has a history of heart disease), group 2 (patient has a history of kidney disease), group 3 has a history of hypertension, group 4 (patient has a history of DM), group 5 (patient has a history of tuberculosis), group 6 (patient has a history of comorbid disease). For the sub-district group in Bogor City, there are 6 (six) groups, namely group 1 (West Bogor subDistrict), group 2 (South Bogor subDistrict), group 3 (Central Bogor subDistrict), group 4 (East Bogor subDistrict), group 5 (Central Bogor subdistrict), (North Bogor subdistrict), and group 6 (Tanah Sareal subdistrict).

The empirical model used by researchers to find out what factors can cause the risk of death of COVID-19 patients are as follows:

Current Condition Model Patient recovers or dies = β_0 + β_1D_apd14 + β_2D_ close contact + β_3D_ gender + β_4D_ come out + β_5D_age _kel_i1 + β_6D_age_kel_i2 + β_7D_age_kel_i3 + β_8D_age_kel_i4 + β_9D_age_kel_i5 + β_{10}D_umur_kel_i6 + β_{11}D_umur_kel_i7 + β_{12}D_ heart _com + β_{13}D_ kidney _com + β_{14}D_ hypertension _com+ β_{15}D_dm_com+ β_{16}D_tb_com + β_{17}D_comorbid_com + β_{18}D_ smoking + β_{19}D_subdistrict_r_i1 + β_{20}D_subdistrict _r_i2 + β_{21}D_subdistrict _r_i3 + β_{22}D_subdistrict _r_i4 + β_{23}D_subdistrict_r_i5 + β_{24}D_subdistrict _r_i3 +ei

Description:
1. The dependent variables are the condition of the patient recovering or the patient dying.
2. β_0 = constant

3. $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7, \beta_8, \beta_9, \beta_{10}, \beta_{11}, \beta_{12}, \beta_{13}, \beta_{14}, \beta_{15}, \beta_{16}, \beta_{17}, \beta_{18}, \beta_{19}, \beta_{20}, \beta_{21}, \beta_{22}, \beta_{23}, \beta_{24}$ = Coefficient of regression
4. D = Dummy
5. The independent variable consists of:
   a. close_contact = Patients exposed due to close contact
   b. gender = Patient gender (Male and Female)
   c. come out = The patient has a history of going abroad or outside the region
   d. age_kel_i1 = the age of patients between 0 - 10 years old
   e. age_kel_i2 = the age of patients between 11 - 20 years old
   f. age_kel_i3 = the age of patients between 21 - 30 years old
   g. age_kel_i4 = the age of patients between 31 - 40 years old
   h. age_kel_i5 = the age of patients between 41 - 50 years old
   i. age_kel_i6 = the age of patients between 51 – 60 years old
   j. age_kel_i7 = the age of patients over 60 years
   k. heart _com = The patient has a history of heart disease
   l. kidney _com = The patient has a history of kidney disease
   m. hypertension _com = The patient has a history of hypertension
   n. dm_com = The patient has a history of diabetes mellitus
   o. tb_com = The patient has a history of tuberculosis
   p. comorbid_com = The patient has a history of comorbid
   q. smoking_com = Patient is a smoker
   r. subdistrict_r_i1 = Patient's Domicile in West Bogor subdistrict
   s. subdistrict_r_i2 = Patient's Domicile in South Bogor subdistrict
   t. subdistrict_r_i3 = Domicile of the patient in Central Bogor subdistrict
   u. subdistrict_r_i4 = Patient's Domicile in East Bogor subdistrict
   v. subdistrict_r_i5 = Patient's Domicile in North Bogor subdistrict
   w. subdistrict_r_i6 = Patient's Domicile in Tanah Sareal subdistrict

3.2. Data Analysis

From the study results, it was found that COVID-19 patients who could be analyzed empirically were 5,530 COVID-19 patient data from the total COVID-19 patients from March 2020 to January 2021, as many as 15,836 COVID-19 patient data. With an inventory of Patient Data as as illustrated in Table 1.

Table 1. Data on the Latest Condition of Covid-19 Patients (Dependent Variable)

Patient	Last Condition of Covid-19 Patients		
	Freq.	Percent (%)	Cum.
Recover (0)	5,341	96.58	96.58
Died (1)	189	3.42	100.00
Total	5,530	100.00	

Source: Department of Health (COVID-19 detective application) per month March to January 2021

The data above can be explained that the last condition of COVID-19 patients was almost 96.58% declared cured, and those who died were only about 3.42% of the patient data used as research trials.

From Table 2, it can be explained that almost all COVID-19 patients comply with health protocols, one of which uses personal protective equipment with a percentage of almost 99.87%. In comparison, those who do not use personal protective equipment are 0.13%, so that it can be analogous that the community has complied with the health protocol recommended by the Government. Furthermore, for COVID-19 patients, there is almost no close contact with COVID-19 patients, with a greater percentage than those in close contact with COVID-19 patients, which is 83.58%. In the sample of this study, it was found that male COVID-19 patients were almost the same as the percentage of female COVID-19 patients.

Table 2. Basic Characteristics of Research (Independent Variables)

Independent Variable		Total	Percentage (100%)
Patient's Condition	Negative (0)	45	0.81
	Positive (1)	5,485	99.19
Obedience	Not Using PPE (0)	7	0.13
	Using PPE (1)	5,523	99.87
Close Contact	No Close Contact (0)	4,622	83.58
	Close Contact (1)	908	16.42
Gender	Female (0)	2.790	50,45
	Male (1)	2.740	49,55
Travel History Abroad/City	No, come out (0)	2,267	40.99
	Come out (1)	3,263	59.01
Age	0–10	357	6.46
	11–20	488	8.82
	21–30	1,129	20.42
	31–40	1,100	19.89
	41–50	1,017	18.39
	51–60	887	16.04
	>60	552	9.98
Heart Disease	Have no heart disease (0)	5,414	97.90
	Have a heart disease (1)	116	2.10
Kidney Disease	No kidney disease (0)	5,505	99.55
	Have a kidney disease (1)	25	0.45
Hypertension Disease	Have no hypertension disease (0)	5,296	95.77
	Have a hypertension disease (1)	234	4.23
Diabetes mellitus Disease	Have no DM disease (0)	5,422	98.05
	Have DM disease (1)	108	1.95
Tuberculosis Disease	Have no TB (0)	5,501	99.48
	Have TB (1)	29	0.52
Comorbid Disease	Have no comorbid disease (0)	5,149	93.11
	Have comorbid disease (1)	381	6.89
Smoking Habits	Have no smoking habits (0)	5,465	98.82
	Have smoking habits (1)	65	1.18
Domicile	West Bogor	1,405	25.41
	South Bogor	681	12.31
	Central Bogor	519	9.39
	East Bogor	572	10.34
	North Bogor	1,098	19.86
	Tanah Sareal	1,255	22.69

Source: Department of Health (COVID-19 detective application) per month March to January 2021

For the history of traveling abroad or traveling out of town, it was concluded that patients who had a history of traveling abroad or a history of traveling out of town had a large percentage of 59.01% of the number of patients analyzed. For the Age Group, most of the COVID-19 patients suffered from the 20-30 age group, the second group was 31-40, and then the 51-60 age group. For the age group above 60 years, almost 9.98% of COVID-19 patients were analyzed. For data on congenital diseases or smoking habits from the results of patient samples, it can be said that the number of patients suffering from heart disease, hypertension, kidney disease, diabetes mellitus, tuberculosis, comorbid) and does not have a smoking habit is very small.

For the domicile of Covid-19 patients, most of them are domiciled in the West Bogor with a percentage of 25.41%; the second was the Tanah Sareal of 22.69%, the third was domiciled in the North Bogor of 19.86%, the fourth is domiciled in the South Bogor. as many as 12.31%, the five East Bogor as many as 10.34% and the five domiciled in Central Bogor. With the spread of COVID-19 patient data, for areas that have a higher percentage of COVID-19 patients, we must be more careful and continue to work on Health Protocols.

3.3. Results

From the results of the study using the logit regression analysis tool, the following results were obtained:

Table 3. Logit Model Regression Results

Dependent Variable	Patient who died	
	Logit Coefficient	Margin Coefficient dydx
Independent variable		
Positive COVID-19	-7.118***	-0.167***
	(1.094)	(0.0260)
Make close contact	-0.647**	-0.0152**
	(0.308)	(0.00726)
Male	0.430**	0.0101**
	(0.187)	(0.00443)
Traveling abroad/region	0.0661	0.00155
	(0.199)	(0.00465)
The group from 0-10 years old	0.132	0.00310
	(0.905)	(0.0212)
The group from 11-20 years old * Comparison group from 21-30 years old	-0.850	-0.0199
	(0.659)	(0.0156)
The group from 31-40 years old	0.700	0.0164
	(0.584)	(0.0137)
The group from 41-50 years old	1.644***	0.0385***
	(0.532)	(0.0128)
The group from 51-60 years old	2.661***	0.0623***
	(0.508)	(0.0126)
Group 60 +	3.315***	0.0776***
	(0.509)	(0.0130)
Have a history of heart disease	0.365	0.00855
	(0.339)	(0.00795)

Dependent Variable	Patient who died	
	Logit Coefficient	Margin Coefficient dydx
Independent variable		
Have a history of kidney disease	0.781	0.0183*
	(0.475)	(0.0111)
Have a history of hypertension	-0.142	-0.00334
	(0.352)	(0.00824)
Have a history of diabetes mellitus	0.366	0.00858
	(0.353)	(0.00828)
Have a history of TB disease	-0.201	-0.00469
	(0.692)	(0.0162)
Have a history of Comorbid disease	1.165***	0.0273***
	(0.387)	(0.00919)
Have a history of smoking	0.264	0.00618
	(0.628)	(0.0147)
South Bogor * West Bogor Subdistrict Comparison	-0.0125	-0.000292
	(0.320)	(0.00750)
Central Bogor	0.250	0.00586
	(0.336)	(0.00786)
East Bogor	0.121	0.00284
	(0.319)	(0.00746)
North Bogor	-0.0931	-0.00218
	(0.295)	(0.00691)
Tanah Sareal	0.176	0.00413
	(0.272)	(0.00637)
_cons	1.061	
	(1.072)	
N	5530	5530

Source: Department of Health (COVID-19 detective application) per month March to January 2021

Description:
**** : significance on α = 0,01*
*** : significance on α = 0,05*
** : significance on α = 0,1*

The results of the analysis in Table 3 show that the factors causing the death of COVID-19 patients are the male sex factor of COVID-19 patients, patients who have comorbid diseases, and the 41-50 age group, the 51-60 age group, and the 41-50 age group. Age>60 years has a significance value below 0.01, indicating that the male sex coefficient value of COVID-19 patients is positive and statistically significant and has a high risk of dying (Logit coefficient = 0.430, Margin Coefficient dy/dx < 0,01). A positive coefficient means that the gender of COVID-19 patients has a high risk of dying. Although in the sample results, more women became patients (suffered from) COVID-19, in this case, it turned out that the male sex had a high risk of dying.

The results obtained a positive significance, namely the 41-50 age group has a logit coefficient = 1.644, a margin coefficient dy/dx = 0.0385. The positive coefficient concluded that COVID-19 patients aged between 41 to 50 years old tend to have a major factor of death (died), with a significance of less than 0.05. Second, for the age

group 51 to 60 years, it has a logit coefficient = 2.661 and a margin coefficient dy/dx = 0.0623. The positive coefficient concluded that at the age of 50 to 60 years old also tend to have a greater risk of dying than the age group between 41-50 years old. For the age group over 60 years with a logit coefficient = 3.315 and a dy/dx coefficient = 0.0776, it means that this group also has a greater risk of dying than the 41-50 years old age group and the 51-60 year age group, with a significance value at below 10 percent (significant below 0.1). This shows that the age group getting older or towards the elderly tends to have a greater risk of dying in this case.

The third significant variable was that the patient has a history of comorbidities. The significance value has a high risk of causing death in the case of COVID-19 patients with a Logit Coefficient = 1.165, Margin Coefficient dy/dx <0.05. A positive coefficient means that patients with comorbid diseases tend to have a high risk of death, cateris paribus (other things are considered constant), with a significance of 0.05.

4. Conclusion

From the analysis results above, it can be concluded that the Bogor City Government has followed up the regulations issued by the Central Government in providing policies that can regulate its citizens in solving the problem of the spread of COVID-19 and regulating policies in the health sector. In essence, the Bogor City Government, in preventing the spread of COVID-19, has synchronized regulations with the Central Government, and the regulations issued are described as protecting its citizens from pandemic outbreaks by implementing Large-Scale Social Restrictions and even issuing Regulations concerning Micro-Scale Social Restrictions and Communities in the City of Bogor. Furthermore, from the results of its implementation, community members have complied with the use of personal protective equipment such as obediently and obediently wearing masks wherever they are. In fact, from the patient data sampled in empirical testing, almost 99.87% (Ninety-Nine point eight seven percent) of patients were wearing PPE.

From the results of the study, those who have a large risk correlation affecting the death of COVID-19 patients are not patients who have complied with using PPE only, but from the results obtained that those who have a risk of dying are COVID-19 patients who were male, aged between 41 years and over (the tendency to be older, the greater the risk of death for COVID-19 patients) or the elderly. These COVID-19 patients have a history of comorbid disease. COVID-19 patients, although almost 99% of them comply with health protocols by using personal protection, do not have a history of close contact (83.58%) with COVID-19 patients and have a history of traveling abroad or outside the region (59.01%) are not at risk of having a high probability of death. Still, from the research trend, male patients, elderly, and have a history of comorbidity will tend to have a high risk of dying in this case.

Based on the results of the juridical analysis and empirical studies conducted by researchers, the researchers provide suggestions that the enforcement of Health Protocol Regulations can be maintained and understood by the people of Bogor. It must be rembered that by knowing the factors that have a high risk of causing death during the COVID-19 pandemic. 19, people will be more careful to take care of the risks that can happen to them. The condition of the elderly, male gender, and having comorbid diseases must be more careful and stricter in maintaining the health of themselves and their environment so that they can help the Government, in this case, support the policies of the Bogor City Regional Government in preventing and overcoming victims of the COVID-19 pandemic. It is hoped that the community of Bogor City can understand the regulations and implement them with the principle of compliance and obedience to regulations. So that the Government's role in protecting its citizens in protecting the health sector during this pandemic can be realized and follow the provisions of existing laws and regulations.

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