Hasil Cek_Socio-demography..

by Liena Sofiana, Dkk

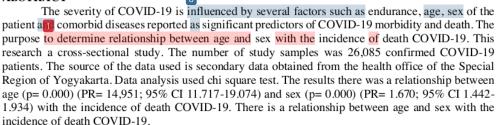# Socio-demography of Covid-19 Death in the Special Region of Yogyakarta

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ABSTRACT

The severity of COVID-19 is influenced by several factors such as endurance, age, sex of the patient and comorbid diseases reported as significant predictors of COVID-19 morbidity and death. The purpose to determine relationship between age and sex with the incidence of death COVID-19. This research a cross-sectional study. The number of study samples was 26,085 confirmed COVID-19 patients. The source of the data used is secondary data obtained from the health office of the Special Region of Yogyakarta. Data analysis used chi square test. The results there was a relationship between age (p= 0.000) (PR= 14,951; 95% CI 11.717-19.074) and sex (p= 0.000) (PR= 1.670; 95% CI 1.442-1.934) with the incidence of death COVID-19. There is a relationship between age and sex with the incidence of death COVID-19.

Keywords: Death, Covid-19, Age, Sex

INTRODUCTION

The presence of a new disease originating from the People's Republic of China was first reported by the World Health Organization in 2019. The disease is caused by a virus that can attack the human respiratory system. The disease is called Coronavirus Disease 2019 (COVID-19). Currently this disease causes a lot of adverse impacts internationally or globally (1). COVID-19 is a disease caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). This virus is categorized as zoonotic because it can be transmitted from animals to humans. This disease is a disease that should not be underestimated because this virus spreads so fast (2).

Transmission of COVID-19 is the same as SARS and MERS where transmission through saliva or droplets can occur between humans (3). Confirmed and reported cases of COVID-19 have a variety of symptoms ranging from mild complaints, such as fever and cough, to more critical cases associated with difficulty breathing. Some of the most common symptoms are cough, fever, sore throat, shortness of breath and headache. Symptoms start off mild and become more intense over 5 to 7 days and will worsen if pneumonia develops in the patient (4).

COVID-19 has been declared a Public Health Emergency of international Concern (PHEIC) and this disease was declared a pandemic by WHO on March 1, 2020. The characteristics of a pandemic are indicated by the severity of transmission of this virus in various countries across the globe (5). Data obtained from the WHO, until now there are approximately 200 countries affected by this virus with a cumulative total of cases reaching more than 100 million cases. The country with the highest number of cases is in the United States, with a total of 28 million cases, followed by India and Brazil with 10 million cases. Data from WHO also shows that the total death toll from COVID-19 has reached more than 2 million people (6).

The first case was reported by Indonesia on March 2, 2020, who was suspected of being infected by a Japanese person who lived in Malaysia and was visiting Indonesia because of an event. The increase and spread continues to occur significantly in various regions in Indonesia. As of March 13, 2021, the Ministry of Health of the Republic of Indonesia reported that the total confirmed cases of COVID-19 reached more than 1 million people and a total death toll of 38,329 with a CFR of 2.7%. The spread of COVID-19 cases has now entered all regions in Indonesia. The highest COVID-19 cases were in the provinces of DKI Jakarta and also West Java. Currently Indonesia is in the top 20 countries with the highest total confirmed cases of COVID-19 in the world. The death rate due to COVID-19 is reported to still continue to occur in Indonesia, although it is balanced with the number of recovered patients or sufferers (7).

Yogyakarta Special Region is one of the provinces affected by COVID-19 and is also included in one of the highest provinces with total cases of COVID-19. Yogyakarta Special Region also entered the region with local transmission. Total positive COVID-19 in Yogyakarta reached 30,027 cases and 722 deaths (7). One of the factors that affect the incidence of COVID-19 in the Special Region of Yogyakarta is age, sex and co-operative diseases or comorbidities. COVID-19 sufferers in Yogyakarta are widely reported at the age of 31-45 years (24.7%) and with female sex (52.8%). COVID-19 sufferers with hypertension (48%) and diabetes mellitus (37.3%) are the largest contributors to COVID-19 sufferers in Yogyakarta (8).

The severity of COVID-19 is influenced by several factors such as endurance, age, sex of sufferers and comorbid diseases reported as meaningful predictors of COVID-19 morbidity and death (9). COVID-19 death is defined as death from a clinically compatible disease in possible or confirmed cases of COVID-19. (10). Older age with accompanying disease is associated with a prognosis of COVID-19 and is reported to be a higher cause of death compared to the general population in the absence of accompanying disease. (11). Older age with accompanying disease is associated with a prognosis of COVID-19 and is reported to be a higher cause of death compared to the general population in the absence of accompanying disease (12).

Sex differences are factors that can affect the severity and occurrence of deaths due to COVID-19. The overall COVID-19 death rate in male is higher than in female. A disproportionate death ratio in male can occur due to relatively higher contributions to previous illnesses, high-risk behaviors (smoking and drinking alcohol), occupational exposure and immune response. (13).

The proportion of patients with the male sex experienced a severity to death from COVID-19 greater than with female. This is due to differences in the immune response. Patients with female sex show stronger immune response to pathogens (14).

Based on preliminary studies that have been conducted at the Yogyakarta Special Region Povinsi Health Office, the death rate due to COVID-19 is very high and has increased. The results of interviews with COVID-19 data holders stated that cases of death in the Special Region of Yogyakarta are experienced by many male sufferers and also sufferers with old age. As of February 28, 2021, the total deaths due to COVID-19 reached 678 cases. Old age and male sex contribute to the high death rate in yogyakarta special region. Over-60s contributed a death rate due to COVID-19 of 57.4% and male sex of 60.4%.

Based on this background, researchers are interested in conducting research on the relationship of age and sex with death incidence in COVID-19 sufferers in the Special Region of Yogyakarta.

METHOD

This research is an analytic observational with a cross-sectional study design. This research was conducted in the Special Region of Yogyakarta. The population in this study were all confirmed positive COVID-19 patients who had recovered or had died until March 13, 2021 and recorded at the Yogyakarta Special Region Health Office as many as 30,027 confirmed COVID-19 patients. The sampling technique in this study used purposive sampling by meeting the inclusion and exclusion criteria. The inclusion criteria in this study were confirmed COVID-19 patients who had recovered or had died and were registered at the Yogyakarta Special Region Health Office. Exclusion criteria were incomplete demographic data of patients and not domiciled in the Province of the Special Region of Yogyakarta. Based on the inclusion and exclusion criteria, the number of research samples was 26,085. The data used are secondary data based on reports of epidemiological investigations. Analysis of the data used is the chi square test.

RESULTS

The Province of the Special Region of Yogyakarta is one of the areas with a high population density. This has also led to the rapid spread of COVID-19 cases. COVID-19 cases in the Special Region of Yogyakarta have reached more than 30 thousand confirmed cases. Currently the Special Region of Yogyakarta is included in one of the regions with local transmission. The following is an overview of confirmed cases of COVID-19 per Regency/City in the Special Region of Yogyakarta.

Table 1. Overview of Confirmed COVID-19 Cases per Regency/City in the Special Region of Yogyakarta

Status	Yogyakarta	Sleman	Bantul	Kulon Progo	Gunung Kidul
Treated	4.345	9.294	7.828	4.344	1.869
Die	148	156	151	27	57
Recovered	2.962	6.331	4.726	1.004	1.068
Total	**7.455**	**15.789**	**12.705**	**5.375**	**2.994**

The analysis of the relationship between age and sex with Covid-19 death is presented in the following table:

Table 1. Chi Square Test Results Age and Sex with COVID-19 Death

Variable	Death of COVID-19				Total		P Value	RP (CI 95%)
	Dead		Alive					
	n	(%)	n	(%)	n	(%)		
Age								
>45 years	653	2,5	9.282	35,6	9.935	38,1	0,000	14,951
0-45 years	71	0,3	16.079	61,6	16.150	61,9		(11,717-19,074)
Sex								
Male	433	1,7	11.857	45,5	12.290	47,1	0,000	1,670
Female	291	1,1	13.504	51,8	13.795	52,9		(1,442- 1,934)
Total	724	2,8	25.361	97,2	26.085	100		

Based on table 1, it can be seen that there is a relationship between age and the incidence of death in patients with COVID-19 in the Special Region of Yogyakarta, with a Prevalence Ratio value of 14,951, meaning that patients aged >45 years have a 14,951 times greater risk of dying from COVID-19 compared to patients aged 45 years. The age category based on the Indonesian Ministry of Health (2009), age >45 years is included in the elderly category. The death rate due to COVID-19 in the Special Region of Yogyakarta mostly occurs at the age of >45 years. Researchers argue that this can be caused because in the elderly the body's defense system will decrease or decrease, so they will be vulnerable

to various disease-causing pathogens. In addition, the elderly also do not understand the prevention and control of a disease. As a result, they are unable to take care of themselves, without being accompanied by the people around them.

DISCUSSION

The highest COVID-19 cases in the Special Region of Yogyakarta were in Sleman and Bantul districts. This can be related to the number and density of the population in the district. Areas with high population levels have a significant influence on confirmed cases of COVID-19 (15). Based on the current map of the distribution of COVID-19 cases, there is no red zone determination (high risk) in various areas in the Special Region of Yogyakarta (16).

Older age is associated with death due to COVID-19 and the elderly group (elderly) is at high risk of experiencing severity to death caused by COVID-199 (17) (18). Age is a potential factor for death in patients with COVID-19. The elderly will experience a process of decreasing body resistance, making them susceptible to disease. Older age is associated with ARDS and a higher risk of death (17). A weakened immune system plus the presence of comorbidities can increase the risk of severity and death from COVID-19 in the elderly. Old age is a risk factor for several other diseases, such as hypertension and heart disease, which can be comorbid in addition to COVID-19 (19).

The organ systems of the elderly are less efficient than those of the young. T cells are the main building blocks of the immune system in the body. T cells are a form of white blood cell that are able to look for types of disease-causing pathogens and destroy them. The number of T cells in the human body is very large, but the number of these T cells will decrease with the increase of a person's age as well. If the T cells in the body are no longer numerous or in small quantities, a person's body will be vulnerable and unable to fight disease-causing pathogens (20).

Age >45 years in the Special Region of Yogyakarta today, many are still working. Jobs that require them to leave the house during a pandemic like this can certainly increase the risk for transmission of COVID-19. If a vulnerable age like this is infected with COVID-19, it is very risky to experience the severity level and can even experience death (21)

One of the symptoms of COVID-19 is anosmia, where the sufferer loses the function of the sense of smell and taste, so that the sufferer is unable to smell and taste food (22). If elderly sufferers experience these symptoms, they will lose their appetite because they are no longer able to smell the aroma of food and also feel it. Plus in old age they will experience appetite disorders. Whereas nutrition or nutritious food intake is very necessary for people with COVID-19, especially in the elderly group. Nutrition is very important for the formation of the immune system in the body. This is also the cause of the high death rate due to COVID-19 at the age of >45 years (elderly).

Vigilance in vulnerable groups of the elderly is an important concern in handling COVID-19. One form of handling or prevention of COVID-19 at this time is the provision of vaccines. The COVID-19 vaccine is currently being run by the governmalet, which is useful for building a person's immune system against this COVID-19 disease. The vaccine was administered twice, namely the first dose and the second dose, with a span of 28 days. However, vaccines are currently still prioritized for people who are at risk or vulnerable, one of which is old age (elderly). The governmalet recommaleds age >45 years to immediately vaccinate in health care facilities that have been provided. This is one form of handling or preventing COVID-19 in the elderly (23).

Based on table 1 shows that there is a relationship between sex and the incidence of death in patients with COVID-19 in the Special Region of Yogyakarta, with a Prevalence Ratio value of 1,670, meaning that patients with male sex are 1,670 times more likely to die from COVID-19 than with female patients. The high death rate due to COVID-19 in male can be caused by risky behaviors such as

smoking and drinking alcohol. Smoking habits and alcohol consumption are risk factors for several other or comorbid diseases such as hypertension, heart disease, and COPD. The presence of comorbidities in patients with COVID-19 can worsen their condition and can even cause death. In addition, male tend to be less obedient in carrying out disease prevention and control efforts when compared to female. Based on a report from the Central Statistics Agency (21) most of the population working in the Special Region of Yogyakarta are male, this can be because male are also the heads of families at home, making it obligatory for them to continue working even though they are in the middle. a pandemic like this.

One of the factors of severity to death due to COVID-19 is comorbidities. The highest comorbidities in patients with COVID-19 were hypertension and diabetes mellitus (8). Data obtained from the health profile of the Special Region of Yogyakarta shows that hypertension and diabetes mellitus are more common in males than females (24). This may indicate that the high prevalence of comorbid disease in males may increase the severity of COVID-19 and even cause death. The severity and death of COVID-19 is greater in male than female (14). Another study also showed that more than 75% of deaths due to COVID-19 occurred in male (13).

The male COVID-19 death rate may be due to pre-existing disease or comorbidities (hypertension, diabetes, chronic lung disease), high-risk behaviors (smoking and drinking alcohol), and occupational exposure. Social behavior that supports female is the tendency to follow hand hygiene practices when compared to male. Jobs require male to frequently go out of the house and allow them to meet many people, so they have a greater chance of being infected with COVID-19. If you have been infected with COVID-19, then the chance of a serious illness and even death is greater (13).

Female patients show a stronger immune response to pathogens. Males were considered to be the weaker group in aspects related to resistance and infection control. Differences in sex hormone milieus can also be a determining factor for viral infections, because estrogen has an immune-boosting effect while testosterone has an immunosuppressive effect. SARS-CoV-2 is thought to be able to enter the testes in males, consequently causing a higher viral load and requiring more time to clear the virus. The steroid hormone environmalet and sex organs may also play an important role in the pathogenesis of COVID-19. Male and female also have different levels of resistance to stress. Female show higher resistance to stress than male, this may also contribute to the pathogenesis of COVID-19 (14).

The high rate of COVID-19 death in male must immediately take preventive and control measures, one of which is that every agency or workplace must implemalet the 5M health protocol (wear masks, maintain distance, wash hands, stay away from crowds and reduce mobility). If there are workers who do not comply, then sanctions can be applied. In addition, there is now a COVID-19 vaccine that can be done so that it can increase the body's immune system against the virus that causes COVID-19.

CONCLUSION

Based on the results and discussion, it can be concluded that age and sex are risk factors for death in patients with Covid-19 in the Special Region of Yogyakarta. People with old age are expected to be able to vaccinate which can now be obtained at health care facilities. In addition, always comply with health protocols, fulfill balanced nutrition and regularly take vitamins for people who are already infected or not, especially for male who are often outside the home

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