Analysis of Risk Factors for Death of Covid-19 Patients at Undata Hospital Palu

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ARTICLE INFO	ABSTRACT
	Patients with comorbid are above 45 years on average. Diabetes and heart disease are risk factors for death from COVID-19 because those with diabetes have a 4.384 times greater risk of dying from Covid-19 than patients without diabetes. Patients with heart disease have a 4.319 times greater risk of dying from Covid -19 of the patients without comorbidities. This research aims to determine the risk factors for death of COVID-19 patients at Undata Hospital Palu. This is analytical survey research with case control study method. The total sample is 62 samples consisting of 31 cases and 31 controls using the statistical test, namely the Odds Ratio. The results show that age is a risk factor with an OR value of 5.975>1, gender is a risk factor with an OR value of 1.304>1 and comorbidities are a risk factor with an OR value of 11.979 > 1. For Undata Hospital, it is expected to further improve the quality of Covid services, especially for patients who have age and comorbid risks so as to speed up the healing process of COVID-19 patients and reduce the death rate due to Covid-19.

INTRODUCTION

The Covid-19 virus is a new type of virus that has been discovered and has not been identified in attacking humans before (1). Covid-19 is an infectious disease that causes acute respiratory syndrome (2). The World Health Organization (WHO) declared the Corona virus a pandemic in March 2020 because the transmission of this virus was very massive and fast (3).

WHO data in 2020 as many as 15,012,731 cases and 619,150 people have died due to Covid-19. In Indonesia, which is one of the affected countries, 89,869 people have been infected with Covid-19 and 4,320 people have died from Covid-19. The spread of Covid-19 from human to human is the main source of transmission so that the spread becomes more aggressive. Transmission of Covid-19 from symptomatic patients occurs through droplet nuclei that come out when coughing or sneezing. Several case reports suggest that transmission from asymptomatic carriers is suspected, but the exact mechanism is unknown. Cases related to transmission from asymptomatic carriers generally have a history of close contact or exposure to Covid-19 patients (4).

The World Health Organization (WHO) declared a global emergency against the corona virus because this virus has spread massively and very widely throughout the world. Indonesia's first case of Covid-19 was confirmed in March 2020 and in April 2020 its spread has spread to 34 provinces in Indonesia with the number of Covid-19 cases in Indonesia reaching 406,945 cases, with the number of recoveries reaching 334,295 cases and the number of infected patients. died as many as 13,782 cases (5).

The daily report of Covid-19 per regency and city of Central Sulawesi Province on April 7, 2021, the cumulative number of positive confirmed cases was 11,424 with the highest case being Palu city with 3,042 cases recovered as many as 10,334 cases and 303 cases died with a CFR of 2.65% (Health Office, 2021). Covid-19 cases at the Undata Hospital Palu, both suspected and confirmed positive. Period April 2020 to March 2021 as many as 561 cases (6).

Covid-19 cases with severe comorbid conditions were immediately admitted to the ICU. If the patient comes in moderate and mild conditions, he will be treated in the usual ward. When patients with comorbidities it is not controlled. If it is not controlled, then the patient is treated with intensive and special monitoring. During

monitoring we must know the clinical course of Covid-19, which is also called the virulence of the incubation period. The hospital will provide the best service according to the standards set by the Ministry of Health .Patients go through a critical period to recovery. The patient was declared cured after swab tests were carried out twice and the results were negative. The length of treatment from admission to being declared cured took two weeks for patients without cormobid, and 3 weeks for patients with cormobid. The length of time the patient is treated and cured varies depending on each individual (7).

The results of the study (Satria, 2020), showed that the average age of the patients observed was 51 years with a minimum age of 20 years and a maximum of 95 years. Patients with age > 64 years were 38 cases (15%) and aged 19-65 years were 215 cases (85%). The demographic data above the observed comorbid risk factors are diabetes, hypertension, TB, Chronic Obstructive Pulmonary Disease (COPD), heart disease, pregnancy, asthma, HIV/AIDS (8).

Patients who have comorbid mean age > 45 years. Patients with comorbid diabetes and heart disease are risk factors for death from COVID-19 because patients with comorbid diabetes have a 4,384 times greater risk of dying from Covid-19 than patients without comorbid diabetes, and patients with comorbid heart disease have a 4,319 times greater risk of dying from Covid -19 of patients without cardiac comorbidities, while comorbid hypertension, pulmonary TB, chronic obstructive pulmonary disease, pregnancy, asthma, and HIV/AIDS were not risk factors for Covid-19 death (8).

Based on the above background and a preliminary study where the number of Covid-19 cases increases every day based on the report of the Undata Hospital Covid-19 Team which is a referral hospital for Covid-19 cases in Central Sulawesi and Palu city, so researchers are interested in researching the title " Analysis of risk factors for death of Covid-19 patients at Undata Hospital Palu.

METHODOLOGY

The type of research used in this study is a quantitative study with a case control study design, with a retrospective approach that is looking behind the risk factors for the death of Covid-19 patients at the Undata Hospital Palu, both cases and controls, where cases and controls are characterized by a maching process. This research was conducted at Undata Hospital Palu, in July 2021.

The population in this study were all patients who had been diagnosed with Covid-19 who were undergoing treatment in the isolation room of the Undata Palu Hospital and had been recorded in the medical record for the January to June 2021 period as many as 31 cases. While the samples in this study were some patients who had been diagnosed with Covid-19 who were undergoing treatment in the isolation room of the Undata Palu Hospital and had been recorded in the medical records for the January to June 2021 period (recovered from Covid-19 treatment) as many as 31 controls, so a total of 31 controls. a sample of 62 samples. The sampling technique used is Simple Random Sampling, namely random sampling. The variables in this study were age, gender and comorbidities (independent variables) with the incidence of death of Covid-19 patients (dependent variable) at Undata Hospital Palu. The data obtained were then tested using the OR test.

This study was conducted in accordance with applicable ethical research principles, including maintaining data confidentiality and participant anonymity. The data used in this study were obtained from medical records without disclosing individual identities. There were no direct intervention procedures involving human subjects, and all data were analyzed in aggregate for research purposes. The researchers ensured that this study did not violate the rights of research subjects.

RESULTS
Univariate Analysis
Distribution of Respondents by Age

Distribution of respondents based on age grouped >45 years and 45 years, to obtain an overview of the distribution by age can be seen in table 1:

Table 1. Distribution of Respondents by Age of COVID-19 Patients at Undata Hospital Palu

Age	n	%
>45 Year	31	50
≤45 Year	31	50
Amount	**62**	**100**

Source: Secondary Data 2021

Distribution by Gender

The distribution of respondents based on gender is grouped into male and female, to obtain an overview of the distribution of respondents based on ventilation area, see table 2 below:

Table 2. Distribution of Respondents by Gender of COVID-19 Patients at Undata Hospital Palu

Gender	n	%
Man	36	58,1
Woman	26	41,9
Amount	**62**	**100**

Source: Secondary Data 2021

Distribution of Respondents by Comorbid

The distribution of respondents based on comorbidity is grouped as having comorbid and not having comorbid, to obtain a picture of the distribution of respondents based on comorbidity can be seen in table 3 below:

Table 3. Distribution of Respondents by Comorbid COVID-19 Patients at Undata Hospital Palu

Comorbid	n	%
Having Comorbid	29	46,8
No Comorbid	33	53,2
Amount	**62**	**100**

Source: Secondary Data 2021

Distribution of Respondents by Death of COVID-19 Patients

The distribution of respondents based on the deaths of COVID 19 patients is grouped as Died and recovered, to obtain an overview of the distribution of respondents based on the deaths of Covid 19 patients, it can be seen in table 4 below:

Table 4. Distribution of Respondents by Death of COVID-19 Patients at Undata Hospital Palu

Death	n	%
Die	31	50
Healed	31	50
Amount	**62**	**100**

Source: Secondary Data 2021

Bivariate Analysis
Age Risk Factors with COVID-19 Patient Death

To find out the risk factors for age and death of Covid-19 patients, see table 5 below:

Table 5. Age Risk Factors with Death of COVID-19 Patients at Undata Hospital Palu

Age	COVID-19 patient deaths				Total		OR (95% CI)
	Case		Control				
	n	%	n	%	n	%	

	Case n	Case %	Control n	Control %	Total n	Total %	OR
>45 Year	22	71	9	29	31	50	
≤45 Year	9	29	22	71	31	50	5.975
Total	**31**	**100**	**31**	**100**	**100**	**100**	

Source: Secondary Data 2021

Gender Risk Factors with COVID-19 Patient Death

To find out the risk of gender with the death of Covid-19 patients, see table 6.

Tabel 6. Gender Risk Factors With Death of COVID-19 Patients at Undata Hospital Palu

| Gender | COVID-19 Patient Death | | | | Total | | OR |
| | Case | | Control | | | | (95% CI) |
	n	%	n	%	n	%	
Man	19	61,3	17	54,8	31	50	
Woman	12	38,7	14	45,2	31	50	1,304
Total	**31**	**100**	**31**	**100**	**100**	**100**	

Source: Secondary Data 2021

Comorbid Risk Factors With Death of COVID-19 Patients

To find out the risk of comorbidity with the death of Covid-19 patients, see table 7 below:

Table 7. Comorbid Risk Factors with Death of COVID-19 Patients at Undata Hospital Palu

| Comorbid | COVID-19 Patient Death | | | | Total | | OR |
| | Case | | Control | | | | (95%) |
	n	%		%	n	%	
Having Comorbid	23	74,2	6	19,4	29	50	
No Comorbid	8	25,8	25	80,6	33	50	11,979
Total	**31**	**100**	**31**	**100**	**100**	**100**	

Source: Secondary Data 2021

DISCUSSION
Age Factor With Death of COVID-19 Patients

The results showed that respondents aged > 45 years experienced more deaths than respondents aged 45 years, this is due to a degenerative process that will reduce the ability of cells to repair themselves which causes cells to be unable to survive viral infections. and at the age of > 45 years, most of them have comorbid diseases that affect the healing process, and vice versa at the age of 45 years more recover from Covid disease than those aged > 45 years this is due to the age 45 years at the time treated only a few who have comorbid diseases so that the healing process is faster. This causes the infection to become severe. The results of the Odds Ratio test show that age is a risk factor for death of COVID-19 patients.

Age > 45 years can experience physical changes and psychological changes due to degenerative processes. Aging is a process of slowly losing the ability of tissue to repair itself or replace and maintain normal function so that it cannot survive infection and repair the damage suffered. The aging process is a continuous process (continues) naturally. So far, the Corona virus seems to cause more severe infections and death in the elderly (elderly) than adults or children. The number of patients and cases of death due to Corona virus infection in the elderly continues to increase every day due to reduced immunity of the elderly (9).

The results of the study (Satria, 2020), showed that the average age of the patients observed was 51 years with a minimum age of 20 years and a maximum of 95 years. Patients with age > 64 years were 38 (15%) and aged 19-65 years were 215 (85%). The sexes observed were 126 men (49.8%) and 127 women (50.2%). From the

demographic data above, the observed comorbid risk factors were diabetes, hypertension, TB, COPD, heart disease, CKD, CVA, pregnancy, asthma, HIV/AIDS (8).

The results of this study are in line with the research conducted by Satria.R.M.A et al in 2020 which stated that age was a risk factor for the death of COVID-19 patients with an OR value of 2.097. The results of this study are also in line with research conducted by Indriana in 2020 which stated that there were more ages > 60 years than those aged 60 years, there was a significant relationship between age and the incidence of COVID-19, p-value 0.020. In multivariate analysis, odds ratio was 0.364, 95% CI=0.057-0.864.

Gender Factors with Death of COVID-19 Patients

The results showed that respondents with male gender experienced more deaths than those with female gender. This is due to some male habits such as smoking, earning a living which causes a lot of contact with someone and is exacerbated by some bad habits such as smoking which causes a lot of cell death so that infections will easily attack. This is also evidenced by the results of the Odds Ratio test showing that gender is a risk factor for the death of COVID-19 patients.

Male gender, and active smoking are risk factors for SARS-CoV-2 infection. A greater sex distribution in males is thought to be associated with a higher prevalence of active smokers. In smokers, hypertension, and diabetes mellitus, it is suspected that there is an increase in ACE2 receptor expression (4).

The results of this study are in line with research conducted by Satria.R.M.Adkk in 2020 which stated that gender was a risk factor for the death of COVID-19 patients with an OR value of 1.870. Also in line with research conducted by Indriana in 2020 which stated that there were more males than females, there was a relationship between gender risk factors and the incidence of COVID-1, p-value 0.019. Odds Ratio 0.179, 95% CI=0.021-1,509.

Comorbid Risk Factors with Death of COVID-19 Patients

The results showed that respondents who had comorbidities experienced more death than those who did not have comorbidities. This is because if there are comorbidities or comorbidities, it will worsen the condition of the patient. In addition, patients with comorbidities have an average age of > 45 years, where the ability to heal from covid is very slow and the healing process for covid depends on the comorbid illness they suffer. Comorbid diseases suffered by patients the worse the prognosis, such as diabetes mellitus will have an impact on other organs such as the lungs, kidneys and heart. On the other hand, patients who were treated without comorbidities were less likely to die or experience the healing process from COVID-19. The results of the study using the Odds Ratio test showed that comorbidities were a risk factor for the death of COVID-19 patients.

Patients with comorbidities are known to have a higher mortality rate than ordinary patients. Exposure to Covid-19 in comorbid individuals, for example in diabetics can affect the lungs, heart, kidneys and liver. The most common comorbidities in Covid-19 patients according to research are diabetes, cardiovascular, and respiratory system diseases. According to the guidelines from the World Health Organization (WHO) and the National Institute of Health (NIH) on the care of Covid-19 patients, patients should be separated. with and without comorbidities must also be separated in separate roomsa (10).

The results of this study are in line with research conducted by Satria.R.M.A et al in 2020 which stated that age was a risk factor for the death of COVID-19 patients with an OR value of 4,348. (8).

CONCLUSION

The results of the study using the Odds Ratio test showed that age was a risk factor for death of COVID-19 patients with an OR value of 5,975>1. The results of the study using the Odds Ratio test showed that gender was a risk factor for death of COVID-19 patients with an OR value of 1.304>1. The results of the study using the Odds Ratio test showed that comorbidities were a risk factor for death of COVID-19 patients with an OR value of 11,979>1.

SUGGESTION

For Undata Hospital, it is hoped that it will further increase promotive and preventive efforts by providing counseling about risk factors for exposure to the COVID-19 virus so that it can avoid death due to COVID-19.

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