

Conference Paper

Characteristics of COVID-19 Inpatients at the Muhammadiyah University General Hospital of Malang: A Case Study

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Abstract.

Cases of COVID-19 at hospitals increased over the course of the pandemic, including at the Muhammadiyah University General Hospital of Malang. The hospital was established in 2013, and despite being relatively new, it has played an active role in handling the pandemic by being a COVID-19 referral hospital for the Greater Malang area. This study aimed to describe the characteristics of COVID-19 inpatients at this hospital during the pandemic. The data were taken from medical records and were analyzed descriptively. From March 2020 to July 2021, there were 1762 COVID-19 inpatients at this hospital. Cases spiked in December 2020 and July 2021. Many patients resided in Malang City (39%) and most were male (51%). Patients aged 51-60 years old had the highest percentage of visits (27%). 9.1% of cases died, and the highest rates of death were in patients aged 50-60 years old and those with comorbidities.

Keywords: characteristic inpatient, referral hospital COVID-19, University of Muhammadiyah Malang

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1. Introduction

Since March 2020, the World Health Organization (WHO) has declared the COVID-19 pandemic status[1]. In Indonesia, the first discovery of this case on March 2, 2020[2]. Indonesia has been in a pandemic COVID-19 situation for approximately 17 months, including in the East Java and Greater Malang regions.[3]. Characteristics and properties of the COVID-19 virus, which is very easily transmitted through droplets, this makes all individuals susceptible to contracting this disease[4]. From the data compiled by the COVID-19 task force, in 2021 Indonesia was recorded as per August 11, 2021, there were 3,749,446 cases with a mortality of 112,198 people. In the East Java, it was recorded 345,696 cases with a mortality of 24,158 the number of patients recorded. East Java

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has 1,548 referral hospitals and 3 field hospitals with available beds of 11,986 in referral hospitals and 293 beds in 3 field hospitals[3].

Greater Malang area, which consists of Malang City, Batu City and Malang Regency, recorded 26,979 cases with a mortality of 1,659 cases. Currently, the Malang Raya area consists of 21 referral hospitals and one field hospital with 1,314 beds available in referral hospitals and 320 in field hospitals[5]. Muhammadiyah University General Hospital of Malang has been designated as a COVID-19 referral hospital for the Greater Malang area since April 2020. However, the hospital has actually received and treated COVID-19 patients since before it was designated as a referral hospital. Currently, as a referral hospital, the hospital has 72 COVID-19 isolation beds including the ICU room. This shows that Muhammadiyah University General Hospital of Malang has participated in handling COVID-19 since the beginning of this pandemic. Based on medical record data, Muhammadiyah University General Hospital of Malang since the beginning of the pandemic until July 2021 has handled 2,253 outpatient cases and 1,762 inpatients with a 161 death cases.

Based on the data, the researcher will describe the number of COVID-19 patient visits at Muhammadiyah University General Hospital of Malang during the pandemic in terms of various aspects. We tried to examine this topic to obtain a general description of the characteristics of the COVID-19 inpatients who had been treated at Muhammadiyah University General Hospital of Malang during the period March 2020 to July 2021. It is hoped that from the results of the analysis, the hospital as a COVID-19 referral hospital can contribute to mapping the characteristics of COVID-19 patients in the Greater Malang area.

2. Material and Method

This study is a descriptive study, using secondary data collected from patient medical records, namely the number of inpatient visits from March 2020 to July 2021. The analytical method used in this research is descriptive analysis in the form of graphical presentation to provide information about the data held without testing the hypothesis. This analysis aims to see the general description of the inpatients of covid-19 who are treated at Muhammadiyah University General Hospital of Malang.

3. Results and Discussion

During the period from March 2020 to July 2021, there were a total of 1762 cases of COVID-19 inpatient visits at Muhammadiyah University General Hospital of Malang, 42% occurred in 2020 (March-December) and 58% occurred in 2021 (January-July).

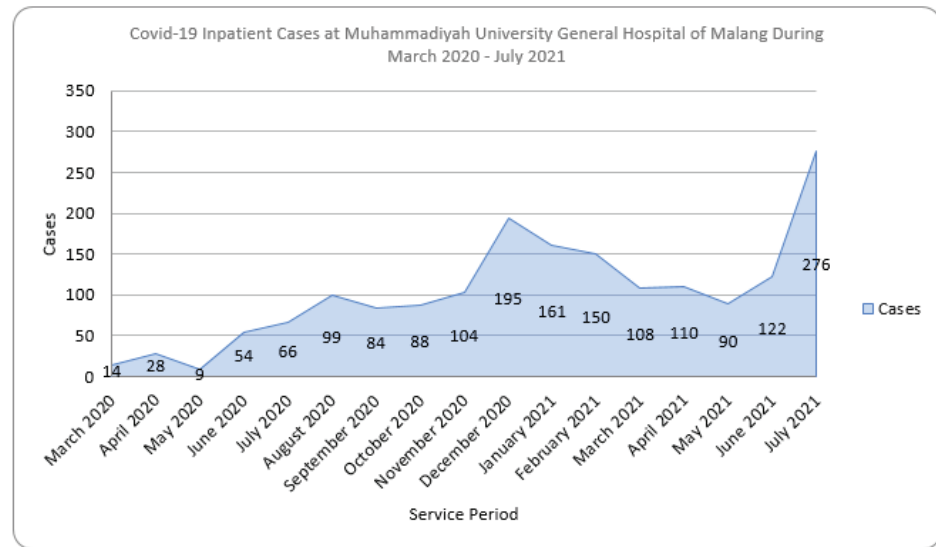


Figure 1: Covid-19 Inpatient Cases at Muhammadiyah University General Hospital of Malang During March 2020 – July 2021.

The number of inpatient visits experienced a spike in December 2020 (195 cases) and also increased rapidly in July 2021 (276 cases). If seen in the graph above, COVID-19 inpatient cases at Muhammadiyah University General Hospital of Malang began to increase since November 2020, where in that month the hospital began to be designated as a COVID-19 referral hospital for the East Java region[5]. COVID-19 inpatients increased significantly in December 2020. In addition to the impact of the relaxation of restrictions on community mobility by the government[1]. This is also because the hospital continues to increase the number of beds for COVID-19 patients in its isolation room. COVID-19 cases again experienced a rapid increase in July 2021, namely as many as 276 cases. This happened as a result of the post-national holiday in early May 2021 and the outbreak of the Delta variant of the corona virus in Indonesia[6, 7]. In a journal written by Gaffar[7] The recent outbreak of delta variant cases in Indonesia is the impact of uncontrolled community mobility and the loose application of government regulations. In addition, in April 2021 the University of Muhammadiyah Malang (UMM) as the owner of the hospital began to develop a COVID-19 emergency hospital with a capacity of 72 beds and there is still the possibility of more[8]. With the increasing capacity of the COVID-19 isolation room beds owned by the hospital, it automatically

led to an increase in data on inpatient visits for COVID-19 patients at Muhammadiyah University General Hospital of Malang.

TABLE 1: Number of inpatients for COVID-19 by domicile.

Region	Amount	Percentage
Batu city	197	11%
Malang city	680	39%
Malang Regency	652	37%
Out of Malang	233	13%
Total	1762	100%

Based on the data above, it appears that based on the domicile area, patients who live in the Malang city area have the largest percentage (39%). Although administratively Muhammadiyah University General Hospital of Malang is located in Malang Regency, in fact the hospital is located right on the border of Malang City and Malang Regency administrative areas and is still quite close to Batu City area[9], so that patients who come for treatment can come from these three areas.

TABLE 2: COVID-19 patients by age group and gender.

Age group	1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-100	total
Man	51	16	74	108	141	267	185	75	19	936
percentage based on male age group	3%	1%	4%	6%	8%	15%	10%	4%	1%	53%
Woman	34	17	135	87	149	207	125	62	10	826
percentage by age group women	2%	1%	8%	5%	8%	12%	7%	4%	1%	47%
percentage by age group	5%	2%	12%	11%	16%	27%	18%	8%	2%	1762

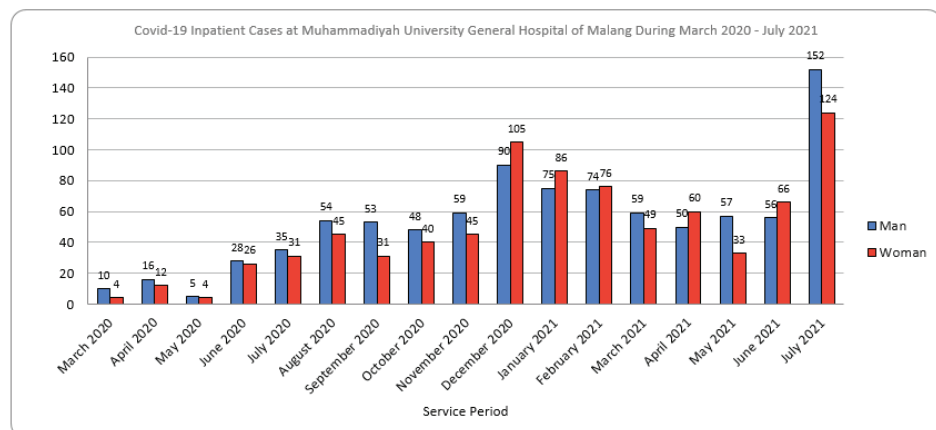


Figure 2: Covid-19 Inpatient Cases at Muhammadiyah University General Hospital of Malang by genders.

Although not much different, when viewed by gender, male inpatients have a higher percentage than female patients (53%). Several studies have shown that age and gender, in addition to influencing susceptibility to the COVID-19 virus, also affect disease severity and mortality. It is stated that men are more vulnerable and also tend to be more severe and have a higher mortality rate than women[10–12]. In a meta-analysis, it was stated that in cases of COVID-19, men were three times more likely to require intensive care than female patients[13]. Another study states that men are more susceptible to COVID-19 disease due to differences in immune responses between men and women. The innate adaptive immune system in women has a higher CD4+ T cell count, stronger CD8+ T cell cytotoxic activity and a higher production of B cell immunoglobulin compared to men, so women’s immune systems tend to be stronger and good[13].

In terms of age group, the highest percentage is in the 51-60 year age group (27%), followed by the 61-70 year age group (18%) and the 41-50 year age group (16%). From these data, it appears that the highest percentage of COVID-19 inpatients at Muhammadiyah University General Hospital of Malang is in the age range of 41-60 years, where this age range is included in the productive age who has high mobility and social activities[14, 15]. People with high social activities have a risk of exposure to COVID-19, so it is necessary to determine strategies to reduce risk, namely preventing aerosol transmission and preparing oxygen to prevent worsening of congestion conditions. Inpatient visits for COVID-19 patients increased with age, with rates of 1% among the 20-29 group, 4% of the 50-59 group, and 18% among people aged 80 or older[16]. Worsening conditions to be able to make regular approaches to the community and health facilities. This can be done by the government, community institutions, health workers or other individuals by providing consultation and education through teleconsultation and abolished facilities. When there is a risk of worsening the situation, the team of professional health workers needs to immediately take action according to their competence[17].

TABLE 3: COVID-19 patients died by age group.

Age Range	Patients Died by Age Group									Total
	0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	80-100	
Case	85	33	209	195	290	474	310	137	29	1,762
Die	0	1	2	12	18	51	46	24	7	161
Percentage of Total Cases	0.0%	3.0%	1.0%	6.2%	6.2%	10.8%	14.8%	17.5%	24.1%	

Death occurred in 9.1% of cases, the highest number in the 51-60 year range because indeed the highest number of cases was in this age group. However, as a percentage of the number of cases in each age group, the highest was in the 80-100 year old

group (24.1%). Of the total patients died, the majority were comorbid (65%). The age factor is a factor that aggravates this COVID-19 disease. The older you are, the higher the probability of dying from COVID-19[18–21]. This can be seen from the research data, that the older the age, the higher the percentage of deaths in cases in that age group. In a journal published by the World Bank Group, it was written that in developing countries, there are more cases of COVID-19 deaths at a younger age than in developed countries. In the journal it was written that in developed countries the mortality rate in the 70-79 year age group was 12.6 times higher than the 50-59 year age group, while in developing countries it was only 3.5 times[22]. Significant increase in mortality among older people > 70 years. Age is a very important risk factor in determining the prognosis. In March 2020 by the CDC revealed that 67% of reported COVID-19 cases were over 45 years of age, with 80% of hospitalized patients in the same age group. These data show a correlation that increasing age is a factor in increasing mortality Preventing and intervening efforts in preventing and treating medical conditions in the elderly group is very important to prevent the worsening of conditions due to covid[23]. COVID-19 patients in aged 70 years often require longer treatment in the ICU, are more likely to have long-term complications and a higher risk of death compared to patients aged 60 years[24].

4. Conclusion

Muhammadiyah University General Hospital of Malang has handled 1762 inpatient cases of COVID-19. The majority of Malang City, male, aged 51-60 years. The percentage of death cases is 9.1%, the highest number is at the age of 50-60 years old and cases with comorbidities.

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