

Clinical Characteristics and Positivity Rate of COVID-19 in Semarang, Central Java, Indonesia

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Abstract. Data regarding the positivity rate and clinical characteristics of COVID-19 in Semarang was still rare. Even though, the data was needed to make policies in dealing with COVID-19 pandemic. This study will present data of positivity rate and clinical characteristics of COVID-19 in Semarang. The data sources used in this study were secondary data from scientific journals and official government news. On March 5, 2021, the number of COVID-19 in Semarang was 431 patients with 219 of them were males (50,81%) and 212 were females (49,19%). If grouped by age, patients aged 20-54 years had the highest number with 239 patients (55,45%). Then the positivity rate of COVID-19 in Semarang on March 5, 2021 was 19,97%. The positivity rate of COVID-19 in Semarang was very high if compared to the WHO standard which is only 5%. In Semarang, men and young people were more susceptible to exposure to COVID-19.

Keywords: COVID-19, clinical characteristics, and positivity rate.

1 Introduction

In March 11, 2020, World Health Organization (WHO) declared COVID-19 or *Coronavirus Disease-2019* as a global pandemic [1]. COVID-19 is a disease that occurred by a virus called *Severe Acute Respiratory Syndrome Coronavirus 2* (SARS-CoV2). SARS-CoV2 is a new type of virus from the *Coronavirus* family that was first discovered in Wuhan, China in December 2019. This disease affected in the respiratory tract of human and originally this SARS-CoV2 was transmitted from animals to human, and now SARS-CoV2 transmitted from human to human. Because the transmitted of COVID-19 was from human to human and spreads via droplets, so the spread of COVID-19 is very quickly due to human mobilities [2] [3].

A patient who is confirmed positive of COVID-19 is someone who has tested positive for the COVID-19 virus as proven by RT-PCR laboratory examination. This is accordance with KMK-RI No. HK.01.07/MENKES/413/2020 concerning Guidelines for the Prevention and Control of CORONA VIRUS DISEASE (COVID-19) [4]. Confirmatory cases can be divided into two, namely confirmation cases with symptoms (symptomatic) and confirmation cases without symptoms (asymptomatic) [2] [3]. Confirmed patients with symptoms will be directed to seek treatment at a health facility, while for patients without symptoms will be self-isolated. The main symptoms that occur in patients who are positive for COVID-19 are fever, dry cough, dyspnea, fatigue, muscle aches, and headache. Apart from these symptoms, other symptoms of the gastrointestinal tract and neurological manifestations were also reported [5].

The COVID-19 pandemic has been running for more than a year, but the positive number of COVID-19 is still increasing every day. As of March 15, 2021, in the world there were

78.412.817 confirmed cases of COVID-19 and 1.740.865 cases died [6]. Meanwhile in Indonesia there were 1.425.044 positive cases, 1.249.947 recovered cases, 38.573 cases died, and 136.524 active cases [7]. The number of positive COVID-19 in Indonesia has made Indonesia ranked 19th from 192 countries that exposed to COVID-19 in the world [8]. In addition, Indonesia ranks first with the highest active cases of COVID-19 among countries in Southeast Asia [9].

The number of confirmed cases of COVID-19 in Indonesia has spread across 34 provinces [2] [3]. Central Java is in the 3rd rank of the highest positive daily cases in Indonesia with the addition of cases on March 15, 2021 was 700 patients [7] [10]. So that the total active cases in Central Java as of March 15, 2021 were 6.033 patients with Semarang in the first rank with the highest number of active cases [2] [10] [11]. On March 5, 2021, the number of active COVID-19 cases in Semarang reached 431 patients with 219 patients were males and 212 patients were females [12]. Data regarding the positivity rate and clinical characteristics of COVID-19 in Semarang is still rare. Even though, the data is needed to make policies in dealing with COVID-19 pandemic. So, this study will present data of positivity rate and clinical characteristics of COVID-19 in Semarang. Hopefully that the results of this study will provide information to the public regarding the COVID-19 case in Semarang, Central Java.

2 Materials and methods

This research uses descriptive research design. The data sources used in this research are secondary data from the recording of COVID-19 patients reported to the Department of Health of Semarang, scientific journals, and official government news. The data source to analyze clinical characteristics of COVID-19 were data from COVID-19 patients in Semarang until March 5, 2021 which is the number of COVID-19 patients were 431 patients. Then the data source to analyze the positivity rate of COVID-19 in Semarang was data from the number of people who confirmed positive for COVID-19 compared to the number of people who were tested for COVID-19. The positivity rate of COVID-19 in Semarang will be shown monthly from November 2020 until March 2021.

3 Results

3.1 Distribution of active cases of COVID-19 by age and gender

The total active cases of COVID-19 in Semarang, Central Java, Indonesia in March 5, 2021 was 431 patients. The distribution by gender show that from 431 patients, 219 patients (50,81%) was males and 212 patients (49,19%) was females. Then the distribution by age show that from 431 patients, 6 (1,39%) patients aged 6 – 9 years, 17 (4,11%) patients aged 10 – 19 years, 239 (55,45%) patients aged 20 – 54 years, 123 (28,53%) patients aged 55 – 69 years, and 46 (10,67%) patients aged more than 70 years [12]. The data shows that there are more cases in male than in female. Besides that, COVID-19 is also infected more young people which aged between 20 – 54 years. The distribution of active cases of COVID-19 in Semarang by age and gender shows in the fig. 1.

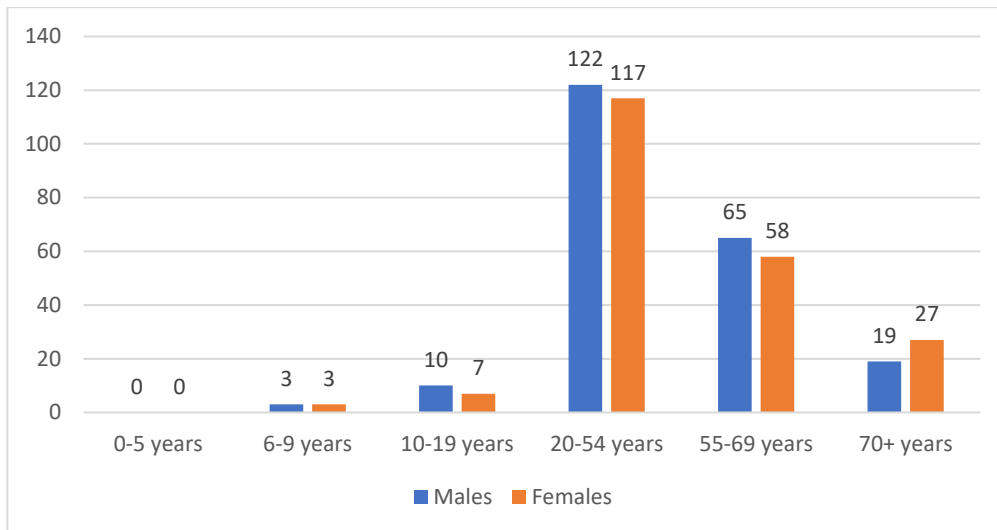


Fig. 1. Distribution of active cases of COVID-19 by age and gender

3.2 Distribution of active cases of COVID-19 by the origin

Active Cases of COVID-19 in Semarang spread in 16 districts with 117 sub-districts and there are 98 patients of COVID-19 who are outside Semarang but the data is included in the data of active cases of COVID-19 in Semarang. The distribution of active cases of COVID-19 by the origin is presented in table 1. The table shows that the highest active cases of COVID-19 are from outside Semarang with 98 cases (22,54%). Followed by the District of Tembalang with 42 cases (9,66%). Then followed by the District of Pedurungan with 38 active cases (8,81%). The lowest active cases of COVID-19 were from District of Tugu with 5 cases (1,15%) [12].

Table 1. Distribution of active cases of COVID-19 by the origin

Sub-district	Number of Active Cases	Percentage (%)
District of North Semarang		
Plombokan	1	0,23
Dadapsari	2	0,46
Kuningan	8	1,84
Panggung Kidul	2	0,46
Bandarharjo	2	0,46
Panggung Lor	4	0,92
Purwosari	3	0,69
Tanjungmas	3	0,69
Bulu Lor	11	2,53
District of East Semarang		
Kebonagung	1	0,23
Rejosari	3	0,69
Bungangan	1	0,23
Sarirejo	3	0,69

District of South Semarang		
Peterongan	2	0,46
Lamper Tengah	5	1,15
Pleburan	2	0,46
Mugassari	1	0,23
Barusari	10	2,30
Randusari	2	0,56
Lamper Lor	3	0,69
Bulustalan	1	0,23
Lamper Kidul	1	0,23
District of Central Semarang		
Jagalan	1	0,23
Brumbungan	1	0,23
Purwodinatan	2	0,46
Sekayu	1	0,23
Pekunden	1	0,23
Kembangsari	2	0,46
Kranggan	2	0,46
Karang Kidul	1	0,23
Pindrikan Kidul	4	0,92
District of West Semarang		
Bongsari	1	0,23
Salamanmloyo	1	0,23
Krapyak	1	0,23
Ngemplak Simongan	1	0,23
Kembangarum	2	0,46
Gisikdrono	6	1,38
Cabean	2	0,46
Kalibanteng Kulon	1	0,23
Krobokan	2	0,46
Karangayu	2	0,46
Bojong Salaman	3	0,69
Tawang Mas	1	0,23
Manyaran	3	0,69
Tawang Sari	1	0,23
District of Gayamsari		
Pandean Lamper	2	0,46
Kaligawe	3	0,69
Gayamsari	5	1,15
Sambirejo	4	0,92
Tambakrejo	2	0,46
District of Candisari		
Jomblang	3	0,69
Karanganyar Gunung	4	0,92
Tegalsari	5	1,15
Candi	5	1,15
Jatingaleh	3	0,69
Wonotinggal	4	0,92

District of Ngaliyan		
Kalipancur	3	0,69
Wates	1	0,23
Wonosari	7	1,61
Tambakaji	3	0,69
Purwoyoso	2	0,46
Gondoriyo	2	0,46
Bringin	2	0,46
Podorejo	4	0,92
Ngaliyan	2	0,46
District of Banyumanik		
Padangsari	1	0,23
Srondol Kulon	3	0,69
Srondol Wetan	5	1,15
Banyumanik	2	0,46
Pudak Payung	2	0,46
Ngesrep	3	0,69
Pedalangan	2	0,46
Tinjomoyo	1	0,23
Sumurboto	2	0,46
District of Genuk		
Bangetayu Wetan	2	0,46
Bangetayu Kulon	2	0,46
Gabangsari	1	0,23
Genuksari	6	1,38
District of Tembalang		
Jangli	2	0,46
Meteseh	2	0,46
Tandang	3	0,69
Kramas	1	0,23
Sendangmulyo	17	3,91
Sambiroto	2	0,46
Tembalang	3	0,69
Mangunharjo	2	0,46
Rowosari	2	0,46
Sendanguwo	4	0,92
Kedungmundu	4	0,92
District of Gajahmungkur		
Karangrejo	2	0,46
Petompon	1	0,23
Sampangan	4	0,92
Lempongsari	4	0,92
Gajahmungkur	3	0,69
Bendan Duwur	1	0,23
District of Pedurungan		
Kalicari	4	0,92
Tlogosari Kulon	11	2,53
Palebon	4	0,92
Pedurungan Tengah	3	0,69

Gemah	3	0,69
Pedurungan Lor	2	0,46
Tlogomulyo	5	1,15
Muktiharjo Kidul	4	0,92
Tlogosari Wetan	2	0,46
District of Gunungpati		
Sukorejo	5	1,15
Patemon	1	0,23
Plalangan	2	0,46
Sadeng	3	0,69
Gunungpati	2	0,46
Mangunsari	2	0,46
Pongangan	1	0,23
District of Tugu		
Tugurejo	2	0,46
Jrakah	3	0,69
District of Mijen		
Jatisari	2	0,46
Wonolopo	2	0,46
Mijen	1	0,23
Bubakan	1	0,23
Other Regency	98	22,54
Total	431	100,00

3.3 The symptoms of COVID-19 in Semarang, Central Java, Indonesia

The main symptoms of COVID-19 are cough, fever, and dyspnea [13]. In some cases, other symptoms have been reported such as diarrhea, fatigue, shivering, colds, nausea, sore throat, asphyxiate, headache, and stomach pain [14] [15]. Apart from symptomatic patients, nearly 50% of the COVID-19 patients in Semarang are reported to be asymptomatic [16] [17]. The Semarang City Health Office also stated that there were several COVID-19 patients who experienced happy hypoxia [12]. Happy Hypoxia is a condition where patients have low oxygen saturations as measured by pulse oximetry ($S_p O_2 < 90\%$), but where no significant respiratory distress and often appear clinically well [18] [19] [20]. Even so, the symptoms of COVID-19 in Semarang are quite varied but the majority experience cough and fever.

3.4 Positivity rate of COVID-19 in Semarang, Central Java, Indonesia

The trend of positivity rate of COVID-19 in Semarang is shown in fig. 2. The positivity rate of COVID-19 in Semarang in the last five months has never been less than 15%. The highest number of positivity rate from November 2020 until March 2021 in Semarang is in February 2021 with 20,02%, it means that every 100 people tested for COVID-19, at least there are 20 people confirmed to COVID-19. Then the lowest number of positivity rate from the last five months in Semarang is in November 2020 with 16,65% [12]. Which is the average of positivity rate of COVID-19 in Semarang from the last five months was 18,36%.

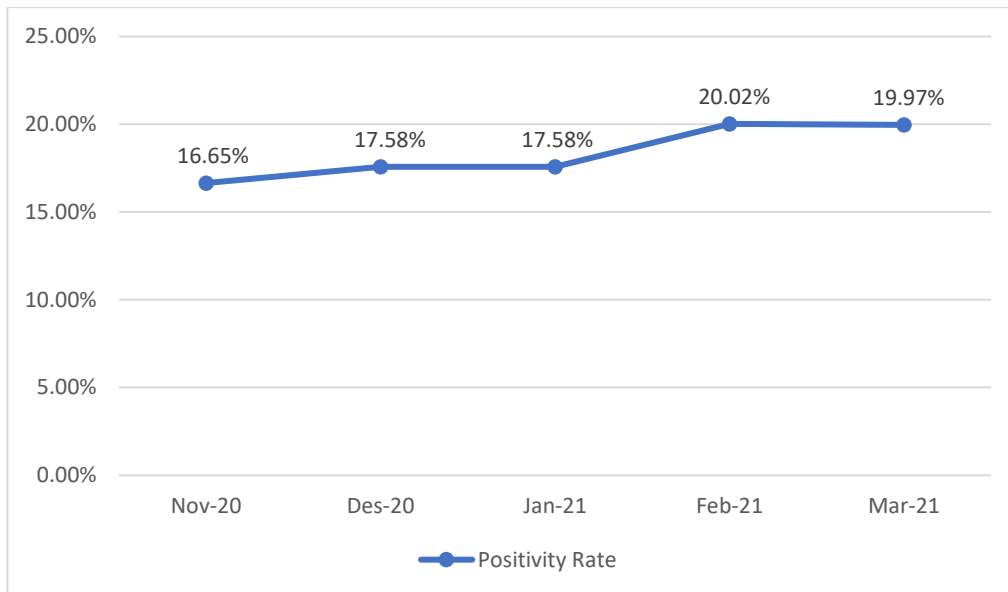


Fig. 2. Positivity rate of COVID-19 in Semarang in last five months

4 Discussion

The number of active cases of COVID-19 in Semarang, Central Java, Indonesia until March 5, 2021 was 431 patients. In the cases based on gender, the number of males were 219 patients or 50,81% while for females were 212 patients or 49,19%. Similar to the distribution of COVID-19 patients based on sex in Indonesia, where of the total cases that occurred in Indonesia, 57% were male patients and 43% were female [2] [21]. This is also the same as research with case studies in China, where of the 44.672 confirmed cases of COVID-19, 51,4% were male and 48,6% were female [2] [3] [22]. However, this is in contrast to the study conducted in Zhejiang, where 59,34% of COVID-19 patients were female and 40,66% were male [23]. Then based on age, the number of COVID-19 patients in Semarang aged 0-5 years was 0 patients, aged 6-9 years were 6 patients or 1,39%, aged 10-19 years were 17 patients or 3,94%, aged 20-54 years were 239 patients or 55,45%, aged 55-69 years were 123 patients or 28,53%, and aged 70+ years were 46 patients or 10,67%. The same thing happened in a study in Beijing with the highest number of patients of COVID-19 at the age of 13-44 years (adults) with 42,7% of the total patients [24].

There are 16 districts in Semarang, Central Java, Indonesia with the highest active cases of COVID-19 are residents of Semarang who are outside Semarang with 98 cases (22,54%). Based on the Decree of the Minister of Health of Republic of Indonesia Number HK.01.07/MENKES/413/2020 concerning Guidelines for the Prevention and Control of Coronavirus Disease 2019 (COVID-19), when a new confirmed case of COVID-19 is found, the variables that must be completed when recording the notification of case discovery are: name, NIK, gender, address, mobile contact number that can be contacted, date of onset (symptoms appear), symptoms related to COVID-19, history (contact/travel/none),

accompanying conditions, epidemiological status (suspect/probable/confirmation), and actions (referral/care/independent isolation). Address variable is filled with residential address in the last 14 days [4]. This shows that 98 COVID-19 patients outside Semarang are people who in the last 14 days have been in Semarang but were confirmed positive for COVID-19 outside the city of Semarang.

The main symptoms of COVID-19 are cough, fever, and dyspnea. In addition, there are several other symptoms that have been reported in COVID-19 patients, such as diarrhea, fatigue, shivering, colds, nausea, sore throat, asphyxiate, headache, and stomach pain. Apart from symptomatic patients, nearly 50% of the COVID-19 patients in Semarang are reported to be asymptomatic. Even so, the symptoms of COVID-19 in Semarang are quite varied but the majority experience cough and fever. Other studies have shown that the highest symptoms seen in patients of COVID-19 were fever with 91,3%, followed by cough with 67,7%, fatigue with 51%, and dyspnea with 30,4% [25]. The most common symptoms in COVID-19 patients are symptoms of acute respiratory disorders such as fever, cough, and asphyxiate [26].

Positivity rate of COVID-19 in Semarang from November 2020 until March 2021 has never been less than 15%. During the last five months, the highest positivity rate was in February 2021 with 20,02%, meaning that for every 100 people tested for COVID-19 at least 20 people were confirmed positive for COVID-19. Then followed by March 2021 with a positivity rate of 19,97%. The positivity rate for COVID-19 in Semarang needs attention because it has far exceeded the standard limit for the positivity rate of COVID-19 set by World Health Organization (WHO), which is no more 5% [27]. The method of calculating this positivity rate is by dividing the number of patents confirmed positive for COVID-19 by the number of people who have tested for COVID-19 and then multiplying by 100.

5 Conclusion

The number of confirmed cases of COVID-19 in Indonesia has spread across 34 provinces. Central Java is in the 3rd rank of the highest positive daily cases in Indonesia. In Central Java, Semarang ranks first with the highest number of active cases. The active cases of COVID-19 in Semarang in March 5, 2021 were 431 patients with 219 patients (50,81%) were males and 212 patients (49,19%) were females. Based on the age, the highest number of active cases of COVID-19 in Semarang is at the age of 20-54 years or in adulthood with 239 patients or 55,45%. Active cases of COVID-19 in Semarang spread in 16 districts with 117 sub-districts, with the highest active cases of COVID-19 are from residents outside Semarang with 98 cases (22,54%). Followed by the District of Tembalang with 42 cases (9,66%). Then the lowest active cases of COVID-19 were from District of Tugu with 5 cases (1,15%). Based on symptoms, the symptoms that often appear in COVID-19 patients in Semarang are cough, fever, and dyspnea. However, nearly 50% of COVID-19 patients report no symptoms. Then, the positivity rate of COVID-19 in Semarang requires attention because the positivity rate was far exceed the standard limit for the positivity rate for COVID-19 set by WHO, which is the average from last five months was 18,36%.

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