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RESEARCH ARTICLE

Description of the COVID-19 Incident Based on Regional and Individual Characteristics (*Case Study* in Sleman Regency in The First Year of the Pandemic)

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Abstract

COVID-19 is a disease caused by the SAR virus, which can be transmitted from human to human and, in severe cases, lead to fatalities. Sleman Regency holds the highest number of COVID-19 cases in the Special Region of Yogyakarta (DIY). This research aims to describe characteristic regions and individual COVID incidents in Sleman regency during the first year of the pandemic period. Region's characteristic is observed based on population density, even though the individual characteristic includes age, gender, and mobility. This descriptive research methodology relies on secondary data reports on COVID-19 cases in Sleman District Health Service. The research result showed COVID incidents in the first year of the pandemic is dominated by regions with population density. The highest case in Depok is as much as 18.4%. COVID cases in males in the age group 31-45 years old were 14.4%. The productive ages group also had a prevalence higher than 25.7%. In summary, the highest number of COVID-19 cases in the region with high population density, on male gender and productive age additionally the asymptomatic symptom group.

Keywords: Covid-19; Population density; Gender; Ages; Symptom

Introduction

The cause of Corona Virus Disease 2019 (COVID-19) is the SARS-CoV-2 virus. This virus is a single-stranded RNA virus, which was expected by bats, and subsequently transmitted by humans to humans. (Perhimpunan Dokter Paru Indonesia (PDPI) Perhimpunan Dokter Spesialis Kardiovaskular Indonesia (PERKI) Perhimpunan Dokter Spesialis Penyakit Dalam Indonesia (PAPDI) Perhimpunan Dokter Anestesiologi dan Terapi Intensif Indonesia (PERDATIN), 2022). COVID-19 is also one of the big virus families which takes infection to the respiratory tract and can cause minor or mild disturbances in the respiratory system, in addition, the virus also can involve severe infection and fatality. (Organization, 2020).

The prevalence of COVID-19 cases in the world in early July 2021 reached 184.820.132 cases, and cases of death were recorded at 4.002.209 people which is spread to 223 countries, with the result that Case Fatality Rate (CFR) of 2.17%. Indonesia was ranked 15th in Corona cases in the world on 14 July 2021 with a total of 2.670.046 positive cases. (Data, 2022). Soaring cases in Indonesia were the second wave of COVID-19 cases since it first entered Indonesia. COVID-19 storm has crashed all regions in the world, including Sleman Regency.

Sleman Regency has the highest number of cases in DIY, with the number that is 26.346 cases and 1.060 fatality cases with CFR 4.02, which means exceeds national figures. This high spike in additional cases per day is the second wave of COVID cases up to 400 (Sleman D. K., 2021). Until the end of 2020, Sleman Regency became a region with several cases of the highest confirmed cases if it has to be compared with other provinces or cities in DIY, namely as many as 4.141 cases with the victim dying as many as 68 people, followed by Bantul Regency as many as 2.613 cases with victim dying as many as 55 people, then followed by Yogyakarta city as many as 1.864 cases, Kulonprogo Regency as many as 909 cases, dan the last *Gunung kidul* Regency with 633 cases. (DIY, 2020).

Previous research consensus holds that individual characteristics which hang over ages and genders correspond with COVID-19 infection. Males and females have the same risk of getting infected with

COVID-19. Whereas, ages under 50 years old have a greater risk of getting COVID-19 when compared with other ages, however at that age more affected by COVID-19 without symptoms. (Nia Ayuni Putri, 2021). This is also supported by research by Aeda Ernawati (2021) which states that Covid-19 cases in Pati District mostly attack the productive age group, 46 - 59 years, at 36.59%, with men at 53%. There is a strong influence of population density on the high number of COVID-19 cases. (Ernawati, 2021). Jeni Ester Nelwan's research (2020), showed that population density and altitude had potentially become risk factors of occurrence COVID-19. (Nelwan, 2020). In line with research by Aeda Ernawati (2021) which states that the high number of COVID-19 sufferers in Pati Regency, 79% of which is influenced by population density factors. (Ernawati, 2021).

According to that background, a researcher aims to describe how a regionals and individual characteristics events COVID-19 in Sleman Regency in the first year of the pandemic.

Methods

This research uses an analytical descriptive method with a cross-sectional approach characteristic related to COVID-19 in Sleman Regency. The characteristics which were researched cover the area, time, age groups, and symptoms. The data used is the second data of COVID-19 cases in Sleman Regency during the first year of handling in Sleman Regency. The collected secondary data is then analyzed and looked for supporting references to strengthen the results of the descriptive analysis of the object under study.

Results

Characteristics of COVID-19 According to Region

The following is the Covid-19 case data during the first-year period of the Covid-19 pandemic in Sleman Regency:

Table 1. Distribution of Covid-19 Cases During the First Year Period of Covid-19 in Sleman Regency

No	*Sub-District*	Confirmed Case (%)
1.	Gamping	9,3
2.	Godean	6,4
3.	Moyudan	2,0
4.	Minggir	2,0
5.	Seyegan	3,0
6.	Mlati	10,4
7.	Depok	18,4
8.	Berbah	4,0
9.	Prambanan	2,8
10.	Kalasan	7,3
11.	Ngemplak	5,9
12.	Ngaglik	11,8
13.	Sleman	5,1
14.	Tempel	5,2
15.	Turi	2,1
16.	Pakem	2,6
17.	Cangkringan	1,7

(Sleman D. K., 2021)

According to Table 1 above, the highest number of Covid-19 cases is found in the Depok Sub-district, accounting for 18.4%, while the lowest is in the Cangkringan Sub-district at 1.7%.

Characteristic of Covid-19 According to Gender and Ages

The following is the Covid-19 case data according to age groups during the first-year period of the Covid-19 pandemic in Sleman Regency :

Table 2. Frequency Distribution of Covid-19 Cases According to Age Groups During the First Year of Covid-19 in Sleman Regency

No	Ages Group	Percentage (%)
1.	0 - 5	2,9
2.	6 - 17	10,0
3.	18 – 30	25,7
4.	31 – 45	25,7
5.	46 – 59	23,0
6.	60 – over	12,7

(Sleman D. K., 2021)

According to Table 2, it indicates that the highest number of cases falls within the age groups of 18 to 30 years old and 31 to 45 years old, both accounting for 25.7% each.

On the other hands, the Covid-19 case data according to gender and ages during the first-year period of the Covid-19 pandemic in Sleman Regency is as follows :

Table 3. Frequency Distribution of Covid-19 Cases Based on Gender and Ages During the First Year of Covid-19 in Sleman Regency.

No	Age (Y)	Male (%)	Female (%)
1.	0 - 5	1,5	1,4
2.	6 - 17	5,0	5,0
3.	18 – 30	13,0	12,6
4.	31 – 45	14,4	11,3
5.	46 – 59	12,8	10,2
6.	60 – over	7,5	5,4

(Sleman D. K., 2021).

According to Table 3 above, the COVID-19 cases according to gender and age show the highest percentage in the male gender category (54%), with 14.4% in the age group of 31 to 45 years old.

Characteristics of Covid-19 According to Symptom and Ages

The following is the COVID-19 case data according to symptoms and age during the first-year period of the COVID-19 pandemic in Sleman Regency :

Table 4. Frequency Distribution of Covid-19 Cases According to Symptoms and Age During the First Year of Covid-19 in Sleman Regency

No	Ages (Th)	Without Symptom (%)	Mild Symptom (%)	Moderate Symptom (%)	Severe Symptom (%)
1.	0 - 5	1,8	1,0	0,0	0,1
2.	6 - 17	4,0	3,8	0,1	0,1
3.	18 – 30	14,9	9,6	0,4	0,7
4.	31 – 45	13,1	11,6	0,5	0,5
5.	46 – 59	10,6	10,7	1,2	0,6
6.	60– over	4,6	5,8	1,9	0,4

(Sleman D. K., 2021)

According to Table 4 above, Covid-19 cases categorized by symptoms and age show the highest occurrence in asymptomatic cases (without symptoms) at 49%, with the age group of 18 to 30 age group accounting for 14.9%. Mild symptoms are most prevalent in the 31 to 45 age group (0.5%), while severe symptoms are most frequent in the 18 to 30 age group (0.7%).

Discussion

Characteristics of Covid-19 According to Region

According to table number 1 above, the highest of COVID-19 cases in Depok is as many as 18.4% and the lowest in Cangkringan is 1.7%.

The first COVID-19 cases in Sleman Regency were discovered on 18 March 2020, and have been increasing daily. During the first-year period of COVID-19 in Sleman Regency, from March 1, 2020, to February 28, 2021, the total number of COVID-19 cases in Sleman Regency was 10,107 cases, with a fatality rate of 2.67% and a mortality rate of 0.02%. (Sleman P. K., 2022).

Sleman Regency is an area characterized by the highest prevalence of Covid-19 in its distribution. This phenomenon can be attributed to the high mobility of its densely populated community, as a result, the spread of the coronavirus becomes challenging to control (DIY, 2020).

Sleman Regency is comprised of 17 sub-districts. Among these, the Depok Sub-district stands out with the highest number of cases during the initial year of the COVID-19 pandemic in Sleman Regency. Depok Sub-district is an urban area adjacent to the city of Yogyakarta, encompassing three sub-villages: Maguwoharjo, Caturtunggal, and Condongcatur. These three sub-villages are characterized by high mobility, owing to the presence of numerous educational institutions, shopping centres, and various communal activities. In contrast, the outlying areas, notably Cangkringan Sub-district, located far from urban centres, recorded the lowest COVID-19 infection rate, amounting to 1.7%.

The population of Depok Sub-district in the second semester of 2020 was 123,689 individuals, covering an area of 2,687.6485 hectares or 35.5 square kilometres, with a population density of 3,723 individuals per square kilometre. (Depok, 2022). According to its population density, Depok Sub-district is categorized as a densely populated area. Factors influencing the increase in the number of positive COVID-19 cases during the pandemic in Indonesia include residential areas, parks, and transportation hubs. (Dining Dwi Suci Riyani, 2021). This is further supported by a study conducted by Sidiq Purwoko et al. (2021), which indicates that the weekly spread of COVID-19 cases in Magelang Regency is influenced by the population density in the respective sub-districts. Two sub-districts with the highest cases have a high population density. (Sidiq Purwoko, 2021). This is further supported by a study conducted by Sidiq Purwoko et al. (2021), which indicates that the weekly spread of COVID-19 cases in Magelang Regency is influenced by the population density in the respective sub-districts. Two sub-districts with the highest cases have a high population density (Ernawati, 2021).

The government needs to restrict the mobility of the population, especially among working-age individuals, and enforce strict monitoring of the implementation of health protocols. (Styawan, 2020). The Emergency PPKM (Community Activity Restrictions Enforcement) implemented in Java and Bali until 27 August 2021, has been effective in reducing the weekly confirmed positive cases of COVID-19 per 100,000 population. (Rezky Yayang Yakhamid, 2021). As conveyed by Rizki Adriadi Ghiffari (2020) in his research, it was found that the spread of COVID-19 in Jakarta is predominantly influenced by population mobility, particularly within

the city of Jakarta itself, from one city area to another. (Ghiffari, 2020).

Characteristic of COVID-19 According to Gender and Ages

According to Table 2, it is evident that the highest number of cases is found within the age groups of 18 to 30 years and 31 to 45 years, accounting for 25.7% each. Meanwhile, as indicated in Table 3, COVID-19 cases categorized by gender and age predominantly involve males (54%), particularly within the age group of 31 to 45 years, constituting 14.4% of the cases.

According to Table 3 above, COVID-19 cases categorized by gender and age predominantly involve males (54%), particularly within the age group of 31 to 45 years, constituting 14.4% of the cases.

The age group of 18-45 years represents the productive age group with high mobility in the education and economic sectors. This aligns with the findings of Nia Ayu Putri et al. (2021), which state that individuals under 50 years of age are at a higher risk of contracting COVID-19. The majority of cases are observed in males within the age group of 31-45 years, accounting for 14.4%. This is consistent with the research conducted by Aeda Ernawati (2021), which found that 53% of Covid-19 patients are male. COVID-19 cases primarily affect the productive age group, particularly within the age group of 46-59 years, comprising 637 individuals (36.59%). (Ernawati, 2021).

Male individuals of working age who have underlying health conditions such as hypertension, diabetes mellitus, and heart disease are considered a vulnerable group to Covid-19 exposure. The highest risk of Covid-19-related mortality, on the other hand, is observed among elderly males with underlying health conditions. (Styawan, 2020). This is consistent with research indicating a correlation between age, gender, and the presentation of signs and symptoms in COVID-19. (Hidayani, 2020). Gender is associated with behaviour regarding the Covid-19 pandemic, but not with age, education, occupation, or risk status. (Made Sindy Astri Pratiwi, 2020).

Characteristics of COVID-19 According to Symptom and Ages

According to Table 4 above, COVID-19 cases categorized by symptoms and age predominantly involve asymptomatic cases, accounting for 49%, with the highest percentage within the age group of 18-30 years, which is 14.9%. Mild symptoms are most commonly found in the age group of 31-45 years (0.5%), and severe symptoms are most prevalent within the age group of 18-30 years (0.7%). This aligns with previous research findings, which state that individuals under the age of 50 are at a higher risk of being infected with COVID-19 without exhibiting symptoms compared to other age groups. (Nia Ayuni Putri, 2021). However, Covid-19 cases within the elderly age group only exhibit a low percentage, which is 0.4%. Previous research has found that the elderly age group is at a greater risk of contracting Covid-19. Individuals in the age group of 18-59 years are 3.4 times more likely to be at risk of contracting COVID-19 and transmitting it to others compared to individuals in age groups less than 18 years and over 60 years. (Felly Philipus Senewe, 2021).

Many factors influence the spread of COVID-19 cases, including comorbid diseases, individual health behaviours, and others. This aligns with the research conducted by Felly Philipus (2021), which found that the risk factor of comorbid diseases, specifically diabetes mellitus (DM), significantly affects confirmed COVID-19 cases in Bogor Regency. Other risk factors influencing COVID-19 include individuals with a married marital status and the age group of 18 to 59 years. (Felly Philipus Senewe, 2021).

The symptoms of Covid-19 are also influenced by individual behaviours toward Covid-19. Made Sindy Astri Pratiwi et al. (2021), in their research, found a significant relationship between gender and behaviour during the COVID-19 pandemic, but not with age, education, occupation, or risk status. (Made Sindy Astri Pratiwi, 2020). The severity of COVID-19 is often associated with factors such as age, comorbid diseases, vitamin D deficiency, and obesity that patients may have. (Abiyyu Didar Haq, 2021).

Many factors influence the spread of COVID-19 cases, including comorbid diseases, individual health behaviours, and others. This aligns with the research conducted by Felly Philipus (2021), which found that the risk factor of comorbid diseases, specifically diabetes mellitus (DM), significantly affects confirmed COVID-19 cases in Bogor Regency. Other risk factors influencing COVID-19 include individuals with a married marital status and the age group of 18-59 years (Felly Philipus Senewe, 2021).

Conclusion

The conclusion drawn from this study is that during the initial year of the COVID-19 pandemic in Sleman Regency, the highest incidence of COVID-19 cases was observed in the Depok Sub-district, characterized by high population density and mobility. The majority of COVID-19 cases were recorded among males within the productive age group of 18 to 45 years. Additionally, the most prevalent symptom

group was asymptomatic cases, particularly within the age group of 18 to 30 years.

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Author Contribution and Competing Interest

All Authors contributed to this work in the following ways: All authors have read and approved the final manuscrip

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