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Profile Analysis of COVID-19 Patients in Jambi Province

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ABSTRACT

Background: The potential for COVID-19 transmission has increased sharply, so the government must implement various strategies to control the spread, especially in Jambi Province. The number of positive confirmed cases of COVID-19 in Jambi Province until August 26, 2021, was 27,422 people, with a case fatality rate is 2.37%. This condition illustrates that the spread of COVID-19 is increasing every day, so the government has set a lockdown at Level 4. **Method**: This research aims to analyze the profile of COVID-19 patients in Jambi Province (secondary data analysis) with a cross-sectional study design. Data analysis includes univariate analysis with the mean difference test and Chi-Square test. **Result**: The results show that the age of COVID-19 patients is significantly different between men and women. Furthermore, based on the Chi-Square test, it shows a significant relationship between age and gender and between region and age with a p-value <0.05. **Conclusion**: Indeed, the risk of COVID-19 cases increases with age and differs for each gender with a high level of mobility.

1. Introduction

According to World Health Organization (WHO, Corona Virus Disease 2019 (COVID-19) is an infectious disease caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). This virus has aerosol transmission characteristics, which means it has the potential for aerosol transmission in a relatively closed environment. SARS-CoV-2 has characteristics of human-to-human transmission [1]. The Centers for Disease Control and Prevention explained that close contact with COVID-19 patients, such as living in the same house with COVID-19 patients, is one of the risks for a person to be exposed to COVID-19. In addition, being in the same environment but not in close contact, namely within a radius of 2 meters, is a factor causing exposure to COVID-19, but the risk is low [2].

COVID-19 is a new disease first reported in Wuhan, China. This disease spreads rapidly to various countries in the world so the United Nations declared COVID-19 a global pandemic on March 12, 2020 [3]. Indonesia is one country with the first case of COVID-19 announced on March 2, 2020 [4], and until now, as of August 29, 2021, through the official COVID-19 website, people who have been confirmed positive for COVID-19 are 4,066,404 people [5]. Furthermore, the existence of COVID-19 has an impact on all sectors of life [6].

Jambi Province is one of the provinces that has made policies for the Implementation of Community Activity Restrictions (PPKM) at Level 4 to suppress the spread of Covid-19, which is still high. The PPKM Level 4 policy is effective from August 23, 2021, to September 6, 2021. Based on the risk mapping score from August 2-8, 2021, there are three high-risk areas: Batanghari

Regency, West Tanjab Regency, and Jambi City [7]. This policy is effective because it can reduce the rate of new cases [8]. Based on data on the Jambi Province's official COVID-19 website on September 14, the number of positive cases was 29,081 cases [7].

Previous research conducted by Philips Vermonte and Teguh showed that the characteristics and spread of Covid-19 based on the initial findings of cases were the age group with the most COVID-19 sufferers aged 50-59 years (20.9%) and the area of residence in DKI Jakarta Province (49.8%). As for the provinces of Banten and Central Java, the most cases of COVID-19 were in the 40-49 age group (19.1%) and followed by the 30-39 age group (18.47%) [9]. The study of COVID-19 patients was also carried out in inpatient care at the Immanuel Hospital (RSI) Bandung, where this study showed the age range of most COVID-19 patients was at the age of 51-60 years (29%) [10].

Based on the gender characteristics of COVID-19 patients, there are differences in several studies regarding the highest proportion of the characteristics of COVID-19 patients in the female and male sexes. The study by Asti, et al. [11] found that the most significant proportion of COVID-19 patients was women at 57.7%. This is different from research in West Nusa Tenggara Province; based on the results of the analysis, it was found that confirmed cases of COVID-19 were more common in men, namely 62.5% compared to women (37.5%) [12].

The high level of population density will lead to a high frequency of interaction between individuals in the area. It is noted that the highest positive cases and deaths in the Spanish Flu pandemic of 1918 occurred in countries with high population densities. Likewise, the situation in Indonesia is that the spread of COVID-19 in the DKI Jakarta area varies greatly with different population density classifications per sub-district. The pattern of the spread of COVID-19 varies greatly. Statistical results in the study of Tiara et al. show that population density significantly influences confirmed cases of COVID-19. However, if you look more closely, many other factors affect the confirmed value of COVID-19, such as the intensity of interaction between regions and population mobility [13].

The clinical manifestations of COVID-19 also vary from asymptomatic carriers to pneumonia [14] In Wuhan, China, and Kuwait, most sufferers experience mild fever, cough, fatigue, and shortness of breath. Elderly age and gender, especially men with hypertension, cardiovascular disease, and diabetes, have a bad relationship where the patient will be exposed more quickly [15,16]. Characteristics of COVID-19 patients such as age, gender, and region were further investigated to analyze the profile of COVID-19 patients. This research is expected to be helpful as a reference for further research.

2. Materials and Method

The data source comes from the medical records of all suspected and confirmed COVID-19 patients hospitalized at Raden Mattaher Jambi Regional Hospital from March 22, 2020, to April 8, 2021. The population of this study is 6,565 people, and the sample is 6,560 people. The variables in each respondent's research include the district/city where you live, age, and gender.

This research uses quantitative methods with descriptive analysis and inference. Descriptive statistics were explored by tabulating respondent profiles and descriptive analysis of variables. The inferential analysis was carried out using the Freedom Test (Independence) with Chi-Square and the t-test of two different samples using cross-tabulation.

3. Results and Discussion

3.1. Results

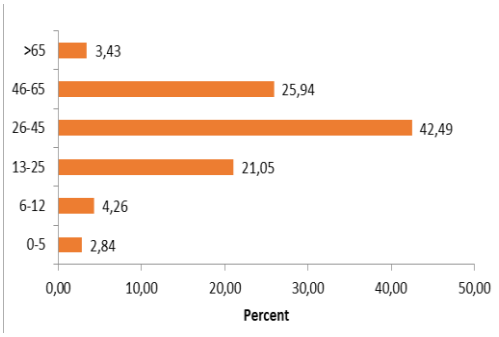
The Raden Mattaher Regional General Hospital (RSUD Raden Mattaher) is a COVID-19 referral hospital in Jambi Province. The number of recorded cases of as many as 6,560 people confirmed positive cases of COVID-19. The number of cases continues to increase from 2020. The number of confirmed cases in 2020 is generally as many as 3,226 cases (49.2%) and increased to 3,336 cases (50.8%). This represents an increase of 1.6%. In addition, the Characteristics of respondents based on age, gender, and place of residence can be seen in Table 1. Table 1 shows that of the 6,560 confirmed cases of COVID-19 in Jambi Province women were more than men, namely 54.8% of women. In addition, the highest confirmed cases were at the age of 26-45 years,

namely 41.4%. For in region case, the number of confirmed cases of COVID-19 was mostly found in urban areas, namely Jambi City (31.1%) and Sungai Penuh City (9.9%). Furthermore, the most confirmed age group is 26-45 years old. The confirmed cases of COVID-19 in the district with the most cases in Muaro Jambi Regency (11.9%), Tanjung Jabung Barat Regency (8.6%), Batanghari Regency (7.7%), Bungo Regency (7.7%).

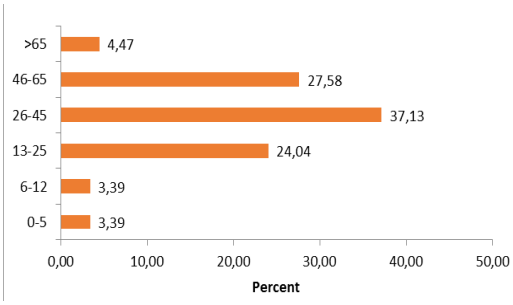
Table 1. Overview Characteristics of Respondents

Variables	n	%
Age		
0-5 years	197	3.0
6-12 years	289	4.4
13-25 years	1,527	23.4
26-45 years	2,714	41.4
46-65 years	1,585	24.2
>65 years	248	3.8
Gender		
Male	2,966	45.2
Female	3,594	54.8
Region		
Jambi City	2,043	31.1
Muaro Jambi	782	11.9
Tanjung Jabung Barat	562	8.6
Tanjung Jabung Timur	265	4.0
Tebo	408	6.2
Kerinci	244	3.7
Bungo	504	7.7
Sungai Penuh City	649	9.9
Merangin	412	6.3
Sarolangun	186	2.8
Batanghari	505	7.7
Age		
0-5 years	197	3.0
6-12 years	289	4.4
13-25 years	1,527	23.4
26-45 years	2,714	41.4

Figure 1 shows confirmed cases of COVID-19 by place and age group in the rural area. The proportion of cases is high in the productive age of 26-45 years in all cities and districts in Jambi Province. Other regencies are Merangin Regency (6.3%), Tebo Regency (6.2%), Tanjung Jabung Timur Regency (4%), Kerinci Regency (3.7%) and Sarolangun Regency (2.8%).



(a)



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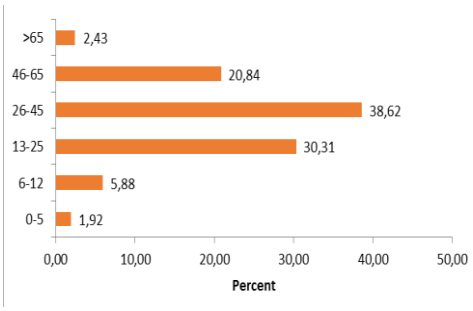
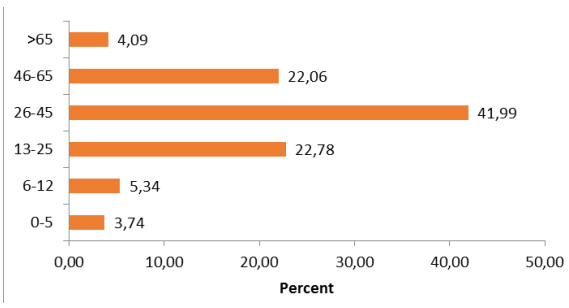
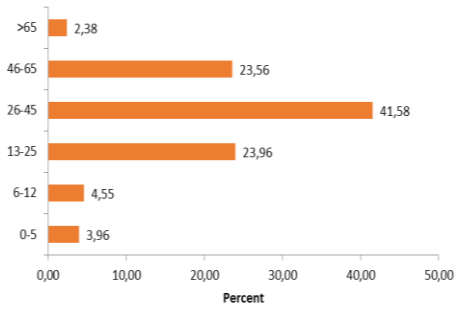

>65 2,43
46-65 20,84
26-45 38,62
13-25 30,31
6-12 5,88
0-5 1,92
0,00 10,00 20,00 30,00 40,00 50,00
Percent

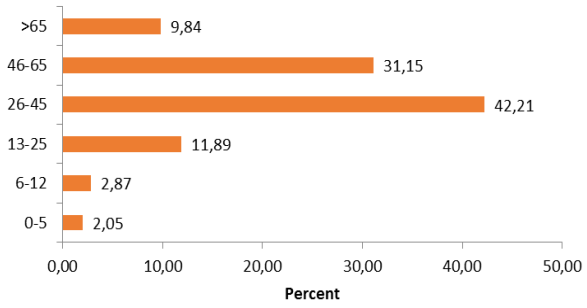
(c)


>65 4,09
46-65 22,06
26-45 41,99
13-25 22,78
6-12 5,34
0-5 3,74
0,00 10,00 20,00 30,00 40,00 50,00
Percent

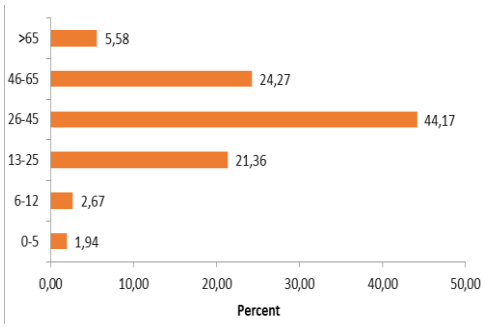
(d)


>65 2,38
46-65 23,56
26-45 41,58
13-25 23,96
6-12 4,55
0-5 3,96
0,00 10,00 20,00 30,00 40,00 50,00
Percent

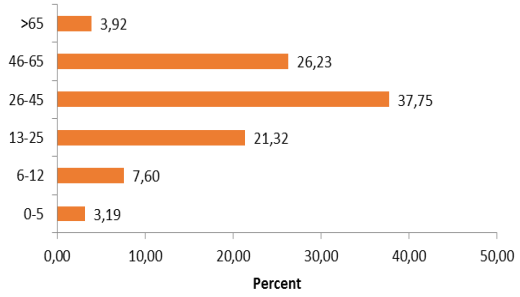
(e)


>65 9,84
46-65 31,15
26-45 42,21
13-25 11,89
6-12 2,87
0-5 2,05
0,00 10,00 20,00 30,00 40,00 50,00
Percent

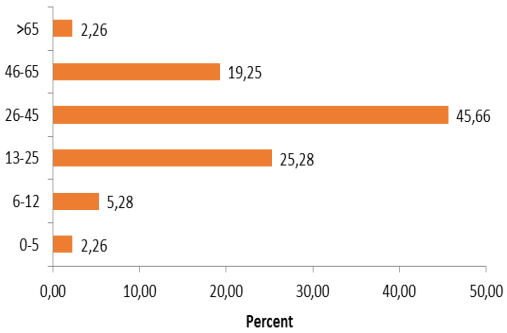
(f)


>65 5,58
46-65 24,27
26-45 44,17
13-25 21,36
6-12 2,67
0-5 1,94
0,00 10,00 20,00 30,00 40,00 50,00
Percent

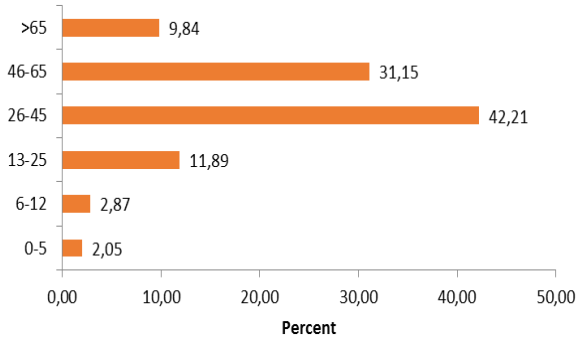
(g)


>65 3,92
46-65 26,23
26-45 37,75
13-25 21,32
6-12 7,60
0-5 3,19
0,00 10,00 20,00 30,00 40,00 50,00
Percent

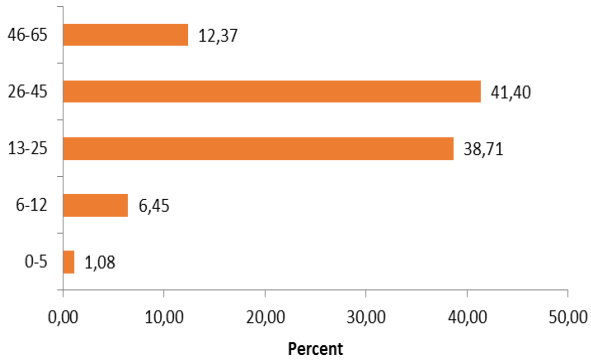
(h)


>65 2,26
46-65 19,25
26-45 45,66
13-25 25,28
6-12 5,28
0-5 2,26
0,00 10,00 20,00 30,00 40,00 50,00
Percent

(i)


>65 9,84
46-65 31,15
26-45 42,21
13-25 11,89
6-12 2,87
0-5 2,05
0,00 10,00 20,00 30,00 40,00 50,00
Percent

(j)



(k)

Fig 1. Confirmed Cases of COVID-19 by Place and Age group in the urban dan rural area; (a) Jambi City; (b) Sungai Penuh City; (c) Muaro Jambi Regency; (d) Tanjung Jabung Barat Regency; (e) Batanghari Regency; (f) Bungo Regency; (g) Merangin Regency; (h) Tebo Regency; (i) Tanjung Jabung Timur Regency; (j) Kerinci Regency; (k) Sarolangun Regency

Furthermore, bivariate analysis was carried out by conducting the Chi-Square test between sex and age. The results show that there is a significant relationship between gender and age of confirmed cases of COVID-19, and age and area of residence in Jambi Province. The results of the independent t-test analysis showed no difference in the average age of confirmed cases of COVID-19 in the male and female sexes with a P-Value of 0.057. This can be seen in Table 3. In addition, the average age of confirmed COVID-19 positive was 35.49 years for males, and for females 34.71 years, there was no statistically significant difference. Positive confirmed cases in Jambi Province based on the age frequency distribution of 41.4% at the age of 26-45 years. More detail can be seen in Table 2.

Table 2. Bivariate Analysis Result

Variables	Age						P-Value (X^2)*	Mean	SD	P-Value (t)*	CI 95%
	0-5 yr	6-12 yr	13-25 yr	26-45 yr	46-65 yr	>65 yr					
Gender											
Male	97	146	634	1,227	742	120	0.008	35.49	16.76	0.057	-0.024-1.58
Female	100	143	893	1,487	843	128		34.71	16.12		
Region											
Jambi City	57	81	429	868	529	79		35.88	16.26		35.07-36.95
Muaro Jambi	16	45	237	302	163	19		32.76	16.13		31.67-33.94
Tanjung Jabung Barat	19	29	128	236	124	26		34.72	16.13		33.22-35.95
Tanjung Jabung Timur	7	13	67	121	51	6		33.57	15.19		31.70-35.39
Tebo	13	29	87	154	106	19	0.000	35.20	17.11	0.000	33.44-36.79
Kerinci	5	6	29	103	76	25		42.30	17.24		39.96-44.34
Bungo	23	27	113	220	115	6		33.53	16.00		32.13-34.93
Sungai Penuh City	24	19	156	241	179	30		36.20	16.99		34.84-37.47
Merangin	9	10	88	182	100	23		36.89	16.31		35.33-38.48
Sarolangun	2	12	72	77	23	0		28.57	13.10		26.59-30.38
Batanghari	22	18	121	210	119	15		33.87	16.24		32.33-35.17

*) Where:
X^2 : Chi-square test
t : Independent t-test

3.2. Discussion

The spread of COVID-19 is swift; this can be seen by the increasing number of events or cases every day, both nationally and globally. The number of confirmed cases of COVID-19 as of

September 8, 2021, quoted from the official website for COVID-19 of Jambi Province, was 28,847 cases and 4,133,433 cases throughout Indonesia [7]. The spread of COVID-19 from infected individuals can be direct or indirect. The direct spread includes droplets or direct splashes from 1-2 meters from people who are coughing or sneezing without a cover. While the indirect spread is through close contact such as touching and shaking hands, touching objects or surfaces contaminated with the virus, then touching the mouth, nose, or eyes before washing hands [4].

Deployment COVID-19 can occur in all age groups. COVID-19 infection can occur in neonates, children, adolescents, adults, and the elderly. The results of the analysis in this study, as shown in table 1, show that the most confirmed cases of COVID-19 in Jambi Province were in the 26–45-year age group. This is the same as the study of Zaenal et al., the characteristics of COVID-19 sufferers in West Nusa Tenggara Province mainly occur at the age of 26-45 years. WHO data have shown that COVID-19 mainly occurs in the adult age group to the elderly [12].

The older a person gets, the higher the risk of impact when infected with COVID-19. This is closely related to the level of immunity which decreases with age. A study showed that the percentage of patients aged ten years and under is smaller than adults or elderly patients (over 70 years of age), which reached 70%. This shows that there is a tendency that the increasing age of a person is positively correlated with the risk of contracting COVID-19 [17]. The results showed that the proportion in children 0-5 years was smaller than other age groups with 3%. This is almost the same as the proportion of the elderly aged >65 years with 3.8%.

The distribution of COVID-19 in DKI Jakarta, West Java, and East Java was found in the 50–59-year age group. This is different from the provinces of Banten and Central Java. In Banten, most cases of COVID-19 were in the 40-49 age group (19.1%) and followed by the 30-39 age group (18.47%). Meanwhile, in Central Java, the proportion of COVID-19 patients from the 50-59 and 30-39 age groups is the same, which is around 21.4 percent [12]. In another study, the age range of most COVID-19 patients was at the age of 51-60 years (29%), 20% at the age between 61-70 years, and 18.7% at the age between 41-50 years [9].

The results of further analysis in this study using the Chi-square test in Table 3 show the proportion of confirmed cases in all districts and cities in Jambi Province in the 26–45-year age group. The average age of confirmed COVID-19 patients was 35.06±16.41 years as seen in Table 5. Liu et al. showed that aged 30–39 years, the risk of severe COVID-19 was almost ten times greater in those aged 80+ years, and in those aged 60–79 years, it was about three times higher [18].

Based on the analysis results, it was found that the confirmed cases of COVID-19 in Jambi Province were more common in women, namely 54.8%. The Chi-Square test results between sex and age groups can also be seen in all age groups in Jambi Province, which are higher in women than men except in the age group of 6-12 years. In the age group 6-12 years, the number is higher in men with 50.5%. In all cities and districts in Jambi Province, the number of confirmed cases of COVID-19 in males is higher than that of females.

Women are more resistant to infection when compared to men, and this can be due to sex hormone factors and the higher expression of the coronavirus receptor (ACE-2) in men. ACE2 is expressed in various human body tissues, including the epithelium of the nose, heart, kidneys, lungs, and functions to inhibit angiotensin II, which has vasoconstrictor and myeloproliferative effects. The S protein (Spike) of SARS-CoV-2 binds to the ACE2 receptor to enter human cells. The regulatory function of ACE2 is impaired, resulting in the accumulation of angiotensin II [19,20]. The high number of COVID-19 cases in men can be influenced by several factors, including hormonal factors, habits, and lifestyle.

In another study, positive confirmed cases of COVID-19 at the Lamaddukkelleng General Hospital in March-September 2020 were also dominated by women, as many as 94 people with a proportion of 57.7% [11]. In Nia's research, the incidence of COVID19 in West Sumatra, the number of infected women was higher than that of men, but this difference was not significant after statistical analysis [21].

This is to the literature, which says that men are more likely to be infected than women. Based on a meta-analysis study linking gender with the risk of COVID-19 infection, it is known that men

are 28% more at risk of infection compared to women. Comparable with the relationship of sex to mortality, men are 1.86% more at risk of dying than women [20].

In addition to hormonal factors, the high number of COVID-19 cases in men can be influenced by habits and behavior [22]. According to Bwire (2020), women tend to have a more responsible attitude towards the COVID-19 pandemic than men in carrying out prevention efforts such as frequent hand washing, wearing face masks, and staying at home. Based on the results of the study, showed that most (50.9%) of COVID-19 patients who tested positive for COVID-19 had a history of contact with patients who were previously confirmed positive [19].

The analysis shows more confirmed cases in urban areas, namely Jambi City, with a proportion of 31.1%. However, the second-highest proportion in Muaro Jambi Regency (11.9%) is adjacent to Jambi City. Meanwhile, Sungai Penuh City is the third highest, with a proportion of 9.9%. In addition to these three cities and regencies, Tanjung Jabung Barat Regency and Batanghari Regency also experienced an increase in cases. Based on the scoring of district and city risk mapping in Jambi Province based on data from August 30 to September 5, 2021, there are two areas with orange zones, namely Jambi City and West Tanjung Jabung Regency.

Research by Asti et al. showed that the most positive confirmed patients were in the Tempe sub-district as many as 77 people (47.2%), followed by the Tanasitolo sub-district as many as 25 people (15.3%). Sengkang City, the capital city of Wajo Regency, is in the Tempe sub-district, so the Tempe sub-district is the center of office activities, trade, and community tourism in Wajo Regency in population density, thereby increasing the potential for transmission. This is in line with Jeini's research in Manado, which showed that in sub-districts with high density, the incidence of COVID-19 was in the medium and high categories [11,23].

A study in the United States and China cited by Jeini also stated that population density could positively affect transmission timing due to the distance between adjacent areas and dense population [23]. Jambi City is the capital city of Jambi Province. Based on BPS data in 2020, Jambi City has the largest population with a population of 307,060 inhabitants. Meanwhile, Muaro Jambi Regency is the district with the largest population of 234,684 people [24]. So with a dense population, there is a high risk of confirmed cases of COVID-19 in the area.

Several case findings in other areas show that population density alone is not the main factor in spreading the virus. Richard Florida, who is an urban expert from the University of Toronto, stated that high-density cities in the United States have varying resilience in the face of COVID-19. Likewise, the area in DKI Jakarta Province with the highest density did not have a significant number of cases as of April 21, 2020. For the time being, there was no significant relationship between population density and the number of positive cases in DKI Jakarta Province [25,26].

In addition to population density, population mobility also affects COVID-19 cases. The increase in population mobility during the new normal period compared to when social distancing was implemented is also in line with COVID-19 cases in Jakarta. During the social distancing period, the average addition of new cases of COVID-19 in Jakarta was 95.1 cases per day, while during the new normal period, the average addition of new cases in Jakarta increased to 200.6 cases per day. In addition, by using correlation analysis, it was found that there is a relatively strong positive correlation between population mobility and new cases of COVID-19 in Jakarta [26].

The results of Seftiya's research show that the most significant case distribution in North Kalimantan occurred through the local transmission of 45.6% (n=1.435). The results of this study are by data on the distribution of data from the Health Office in Bali Province in February 2021, which resulted in 31,106 of 32,789 cases being local transmission [27]. This study also shows that in Jambi Province, COVID-19 cases are found in densely populated areas and with high population mobilization. The difference between other research and the results of the analysis that has been carried out the increase in COVID-19 is not in line with the population density in Bandung Regency. Kuta District, which has the highest density level in Bandung Regency, experienced a not too significant increase in cases. However, there is an increase in mild cases with local transmission from residents in the area [28].

After implementing the social distancing policy, there was a decrease in cases. The phenomenon of social distancing due to a decrease in mobility can still restrain the increase in

cases so that it is still relatively under control. However, there is an increase in cases due to several holidays due to a surge in mobility [29]. The results of Utari's research show that the proposed mitigation strategies given to prevent an increase in COVID-19 cases include, among others, restrictions on local transmission and domestic travel [30].

4. Conclusion

The confirmed cases of COVID-19 in Jambi Province show a relationship between age, gender, and place of residence. In addition, there are also differences in the average age of respondents per district/city in Jambi province. The application of health protocols by washing hands with soap, wearing masks, and keeping a distance can prevent the transmission of COVID-19.

Declaration

Acknowledgments: Nope
Conflicts of Interest: No conflict of interest

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