COVID-19 CLUSTER IN PIKAT VILLAGE, KLUNGKUNG REGENCY, BALI, INDONESIA IN 2022

Pratiwi AAAIA[1]*, Sawitri AAS[2], Putra IWGAE[2], Dharmayuda AANG[3], Astiti CISD[4], Sudilestari AAA[1] and Arimbawa IWS[1]

[1]*Field Epidemiology Training Program, Master of Public Health Science, Faculty of Medicine, Udayana University, Indonesia*
[2]*Department of Public Health, Faculty of Medicine, Udayana University, Indonesia*
[3]*Denpasar Department of Health, Indonesia*
[4]*Bali Department of Health, Indonesia*

Abstract: Since October 2021, there have been no reports of additional COVID-19 cases in Pikat Village. On January 21, 2022, a sick resident with symptoms of fever, headache, chest pain and shortness of breath was taken to Klungkung Hospital for treatment and PCR test results confirmed COVID-19. This investigation aims to evaluate the existence of an outbreak, describe the distribution and its risk factor. Descriptive design and case control were conducted immediately. Cases are residents with or without symptoms or close contacts with positive PCR tests and controls are close contacts with negative PCR results Data was collected using a questionnaire, and was analyzed univariate to multivariate. The index case is likely to be infected with COVID-19 while attending a massive traditional ceremony attended by many people from areas affected by COVID-19, 7 days before symptoms appeared. A total of 16 out of 17 (94.1%) close contacts of the index case were confirmed COVID-19. Tracing of 16 confirmed COVID-19 case showed that 5 out of 42 (11.9%) close contacts also confirmed as COVID-19. The proportion of male and female cases was balanced (54.5% vs. 45.5%), 50% were aged 20-60 years, and 68.2% lived in the index case area. The common symptoms of cases were runny nose/stuffy nose (50%) and cough (50%), but 40.9% were asymptomatic. Multivariable analysis showed that not wearing a mask when outside the house (OR=4.425; 95% CI 1.206-16.233), not keeping a distance (OR=3.69; 95% CI 1.012-13.480), and poor hand hygiene practice (OR=5.99; 95% CI 1.521-23.613) is a risk factor for being infected with COVID-19. It was concluded that there had been a COVID-19 cluster in Pikat Village triggered by reduced compliance with health protocols because they thought that COVID-19 is no longer existed. Socialization of health protocols is needed to prevent similar incidents.

Keywords: COVID-19, cluster, village, Bali, Indonesia

Introduction

Coronavirus disease 2019 (COVID-19) is an emerging disease that has been associated with a rapid increase in afflicted cases and deaths since its first diagnosis in Wuhan, China, in December 2019. On March 11, 2020, World Health Organization (WHO) announced that Coronavirus Disease 2019 (COVID-19) had become a worldwide pandemic (Lai, et.al, 2020).

The first case in Indonesia was found on March 2, 2020, until now COVID-19 cases are still increasing, even in the last few months there was a high spike in cases, namely in January-February 2022. The

Corresponding Author: *tugekindah29@gmail.com

highest spike in cases was reported on February 16, 2022, namely as many as 64,718 cases and cumulative positive cases have reached more than 5 million cases (COVID-19 task force, 2022).

The spike in cases also occurred in Bali Province, confirmed cases increased in early January 2022. The graph of COVID-19 cases in Bali in the range of 27 December 2021 – 9 January 2022 showed a spike in cases (Bali COVID-19 task force, 2022).

On January 21, 2022, information was obtained from Klungkung District Health Office that there was 1 resident of Gelogor sub village, Pikat village, Dawan District, Klungkung Regency who was sick with symptoms of fever, headache, chest pain and shortness of breath the n taken by his family for treatment to the Klungkung Hospital. A rapid antigen test was performed and the result was positive. Then continued with PCR examination and on January 22, 2022, the result was obtained that the patient was confirmed positive for COVID-19. Information obtained that the patient had close contact with the family who lives in the same yard as many as 11 people, some of whom were sick with coughs and colds.

Based on this information, on January 24, 2022, an epidemiological investigation was carried out in the field by a joint team consisting of the Surveillance Team of the Klungkung District Health Office, the Surveillance Team and analysts from the Dawan I Health Center, Indonesian National Army, Indonesian Republic Police, and students of Field Epidemiology Traning Program (FETP) Udayana University to evaluate the existence of an outbreak, describe the distribution and its risk factor.

Method

Type and design of this research was used descriptive and case control design. The investigation was carried out at Pikat Village, Dawan District, Klungkung Regency, Bali on January 21, 2022 - February 15, 2022. The investigation team consisted of Surveillance Officers from the Klungkung District Health Office, Surveillance Officers of Dawan I Health Center Klungkung, medical staff and Laboratory officers and 3 students of Field Epidemiology Master Udayana University. The target of this investigation was all age groups who had close contact with patients confirmed positive for COVID-19. Cases were found based on close contact information from people confirmed COVID-19. Then home visits, interviews and clinical and laboratory examinations were carried out. The instrument used is an epidemiological investigation form and contact tracing.

Definition case used was a person who had close contact of a confirmed case of COVID-19 with or without symptoms of cough, runny nose, fever, shortness of breath, sore throat, headache and positive Polymerase Chain Reaction (PCR) laboratory examination.

Primary data was obtained by conducting direct observations and interviews with people who had close contact with people who were confirmed positive for COVID-19. Close contact information was obtained from people who had confirmed COVID-19. Health officers conducted clinical symptom checks and laboratory officers performed PCR tests on all close contacts. Secondary data was obtained from Dawan 1 Public Health Center in the form of data from the clinical symptom examination and PCR laboratory examination.

The population in this study was all residents of Pikat Village, Dawan sub-district, Klungkung Regency. The number of samples in this study was 60 people, consisting of 22 case samples and 38 control

samples. cases obtained from close contact tracing and the PCR test result was positive, controls obtained from close contact tracing and the PCR test was negative.

The dependent variable of this study is the incidence of COVID-19 and the Independent Variables include visits to crowded places, history of vaccines, comorbidities, wearing masks when leaving the house, social distancing, washing hands with soap.

The results of the univariate analysis are presented in the form of a frequency distribution table where the number of respondents is in the form of numbers and in the form of a frequency distribution table. Bivariate analysis was carried out using the Chi Square test to interpret the magnitude of the influence of each factor expressed by the Odds Ratio (OR) using the 95% Confidence Interval. Binomial logistic regression analysis was performed by associating all risk factors (p value < 0.05 in bivariate analysis) with concurrent COVID-19 infection.

Result

Investigation Results

Based on information from the Bali Provincial Health Office that there were residents in the village of Pikat, Dawan District, Klungkung Regency, who were sick with clinical symptoms of headache, fever, chest pain, and shortness of breath, being treated at the Klungkung Hospital. The hospital conducted a PCR laboratory examination over the patients and the result was positive. Then, a close contact tracing of the positive confirmed patients was carried out.

Based on information from the patient and the patient's companion, it was known that there were 17 close contacts, consisting of 13 families who lived in one yard with the patient, 2 were construction workers who worked at his home, and 2 were co-workers with the patient. Some people experienced symptoms of fever, cough and runny nose. Then the PCR Laboratory examination was carried out on all close contacts, obtained positive results for COVID-19 as many as 16 people. Conducted contact tracing of all confirmed people, obtained 42 close contacts and 5 confirmed COVID-19, so the number of confirmed COVID-19 persons was 22 people.

From the results of the close contact tracing of the index case (Figure 1), there were 17 close contacts obtained. Of the 17 close contacts, 16 were confirmed to be COVID-19, and 1 was negative. The 16 confirmed cases of COVID-19 consisted of 13 families from the index case who live in the same yard as the index case, 1 co-worker of the index case and 2 construction workers at the house of the index case. The 1 negative person is a co-worker of the index case. Then close contact tracing was carried out on the 16 people, obtained as many as 42 close contacts. Of the 42 close contacts, 5 people were confirmed positive and 37 people were negative. The 5 confirmed people are friends of the positive case. 37 negative people consisted of 8 family members, 24 friends and 5 neighbors from positive cases.
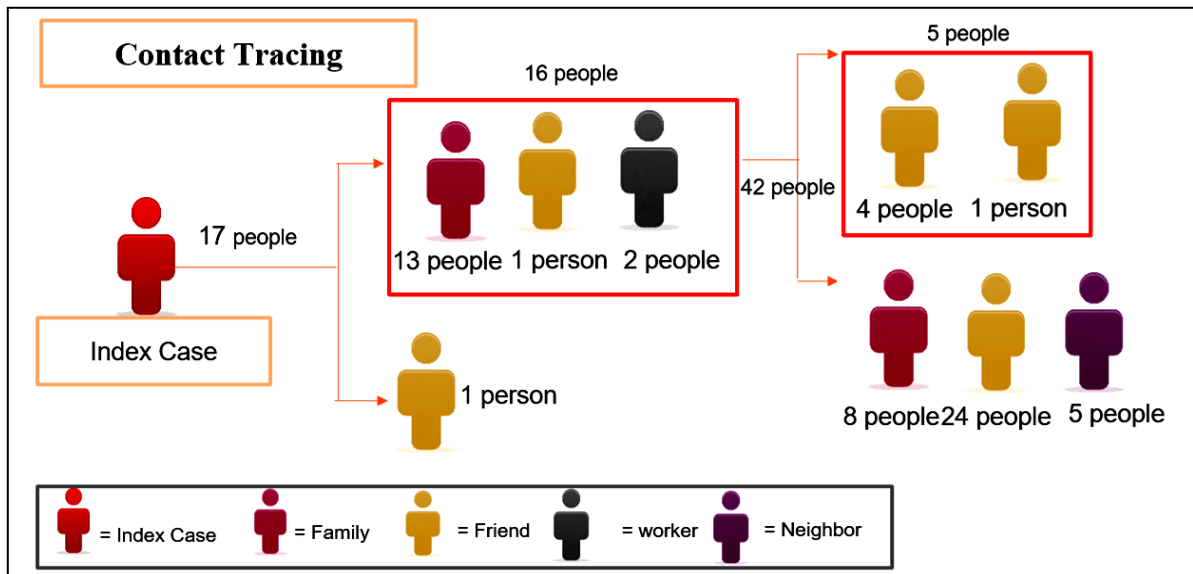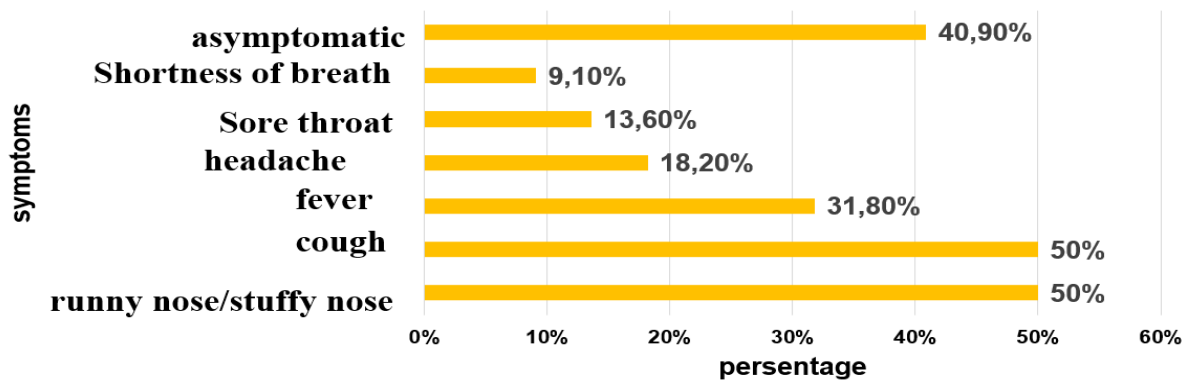
Figure 1. Results of Contact Tracing for COVID-19 Cases in Pikat Village in 2022

Graph 1. Distribution of COVID-19 Cases Based on Symptoms

Based on Graph 1 above, it can be seen that the symptoms experienced by confirmed cases of COVID-19 at Pikat Village were as many as 11 people experiencing runny nose/stuffy nose and coughing symptoms (50%), 7 people experienced fever (31.8%), 4 people experienced headache symptoms (18.2%), 3 people experienced sore throat. (13.6%), 2 people experienced shortness of breath (9.1%), and 9 people were asymptomatic (40.9%). None experienced symptoms of weakness, muscle aches, decreased consciousness, diarrhea, and anorexia/nausea/vomiting.

Table 1. Distribution of COVID-19 Cases in Pikat Village by Gender

Gender	Frequency	Percentage (%)
Male	10	45,5
Female	12	54,5
Total	22	100

From table 1, it can be seen that of the 22 confirmed cases of COVID-19 at Pikats Village, most of them were female, namely 12 people (54.5%), while the number of male gender was 10 people (45.5%).

Table 2. Distribution of COVID-19 Cases in Pikat Village by Age Group

| Age group	Frequency	Percentage (%)
0-1 year	1	4,5
2-10 years	2	9,1
11-19 years	7	31,8
20-60 years	11	50
> 60 years	1	4,5
Total	22	100

Table 2 above shows that of the 22 confirmed cases of COVID-19 at Pikat Village, half was adults aged 20-60 years, namely 11 people (50%). In adolescents aged 11-19 years as many as 7 people (31.8%), children aged 2-10 years as many as 2 people (9.1%), in infants aged 0-1 year as many as 1 person (4.5%), and in the elderly aged> 60 years as many as 1 person (4.5%).

Table 3. Distribution of Cases based on Places

Sub Village	Frequency	Percentage	Population	Attack Rate
Gelogor	15	68,2%	1.145	1,31%
Cempaka	4	18,2%	764	0,52%
Intaran	1	4,5%	332	0,3%
Buug	1	4,5%	395	0,25%
Sente	1	4,5%	396	0,25%
Pangi Kanginan	0	0%	335	0%
Pangi Kawan	0	0%	562	0%
Total	22	100%	3.978	0,55%

Table 3 shows that of the 22 confirmed cases of COVID-19 at Pikat village, most of them were residents of Gelogor village, 15 people (68.2%), 4 people were residents of Cempaka Village (18.2%), 1 resident of Intaran village (4.5%), 1 resident of Pangi village (4.5%). %) and 1 resident of Sente village (4.5%).

A villager had confirmed COVID-19, then infected his family, neighbors and other residents, even other residents of the community in the same village. This led to the formation of a COVID-19 cluster in the village of Klungkung Regency.
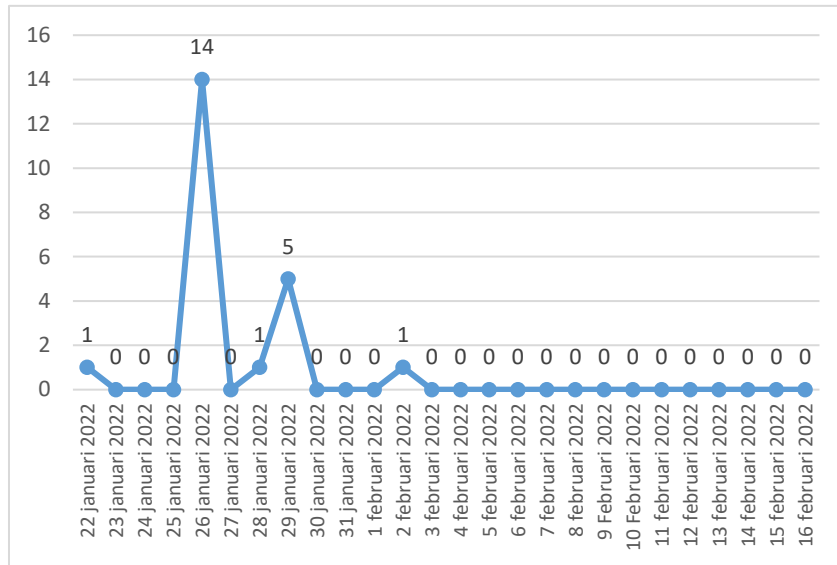
Graph 4. Distribution of COVID-19 Cases in Pikat Village is based on the time of Case Finding.

Based on the graph above, it can be seen that on January 22, 2022, there was 1 confirmed case of COVID-19, this case was an index case in the cluster at Pikat Village. On January 26, 2022, of the close contacts of the index case, the total number of 16 people, as many as 14 people were confirmed COVID-19. On January 28, 2022, 1 more close contact from the index case confirmed COVID-19. Close contacts of confirmed cases of COVID-19 on January 26, 2022, 5 people confirmed COVID-19 on January 29, 2022. On February 2, 2022, 1 person confirmed COVID-19, this case was a close contact of the index case.

Risk Factor Research Results

Table 4. Characteristics of Research Subjects Based on Cases and Controls

Characteristics	Cases		Control	
	Total	Percentage	Total	Percentage
Gender				
Male	10	45,5%	17	44,7%
female	12	54,5%	21	55,3%
Age Group				
0-1 (infan)	1	4,5%	0	0%
2-10 (children)	2	9,1%	6	15,8%
11-19 (teenagers)	7	31,8%	24	63,2%
20-60 (adults)	11	50%	7	18,4%
>60 (lelderly)	1	4,5%	1	2,6%
Vacsin				
Not yet 2 times	2	9.1%	2	5,3%
Already 2 times	20	90,9%	36	94,7%
Comorbid				

Yes	2	9,1%	1	2,6%
No	20	90,9%	37	97,4%
History of crowd visit				
Yes	12	54,5%	8	21,1%
No	10	45,5%	30	78,9%
Washing hands with soap				
No	14	63,6%	9	23,7%
Yes	8	36,4%	29	76,3%
Social Distancing				
No	15	68,2%	14	36,8%
Yes	7	31,8%	24	63,2%
Wearing mask when doing activities outside home				
No	18	81,8%	15	39,5%
Yes	4	18,2%	23	60,5%

From the table above, it can be seen that the number of male respondents was 10 people in the case group and 17 people in the control group. The number of female respondents was 12 people in the case group and 21 people in the control group.

Based on the age group, the number of respondents in the case group was mostly in the adult age group of 20-60 years, namely 11 people. And in the control group, the largest number of respondents was in the 12-19year age group.

Only a small proportion of respondents who had not been vaccinated was in the case group as many as 2 people and from the control group as many as 2 people. Almost all of the respondents from both case group and control group had been vaccinated against COVID-19 at least 2 times, namely 20 people from the case group and 36 people from the control group.

Almost all of the respondents had no comorbidities, as many as 20 people in the case group and 37 people in the control group. Meanwhile, only a small proportion of respondents had comorbidities, namely in the case group as many as 2 people and in the control group as many as 1 person.

Respondents who had a history of crowd exposure, namely in the case group as many as 12 people and included in the control group as many as 8 people. Meanwhile, almost all of the respondents did not have a history of crowd exposure, namely in the case group as many as 10 people and in the control group as many as 30 people.

The number of respondents who did not wear masks when outside the home was 19 people from the case group and 5 people from the control group. Meanwhile, the number of respondents who wore masks outside the home was 3 people from the case group and 33 people from the control group.

The number of respondents who did social distancing was 15 people from the case group and 14 people from the control group. Meanwhile, the number of respondents who did social distancing was 7 people from the case group and 24 people from the control group.

The number of respondents who did not washed their hands with soap was 18 people from the case group and 4 people from the control group. Meanwhile, the number of respondents who washed their hands with soap was 4 people from the case group and 34 people from the control group.

Table 5. Cross Tabulation of the Effect of each Risk Factor on the Incidence of COVID-19 in Pikat Village, Dawan District, Klungkung Regency, Bali in 2022

Variable	Category	COVID-19 attack				OR	95% CI		P value
		COVID-19		No COVID-19					
		n	%	n	%		Lower	Upper	
History of Crowd Exposure	Yes	12	54,5	8	0,01	4,5	1,431	14,150	0,01
	No	10	45,5	30	78,9				
Vaccine History COVID-19	Not yet vaccine 2 times	2	9,1	2	5,3	1,8	0,235	13,771	0,971
	Already vaccine 2 times	20	90,9	36	94,7				
Comorbidity	Yes	2	9,1	1	2,6	3,7	0,316	43,365	0,623
	No	20	90,9	37	97,4				
Wearing mask	No	14	63.6	9	23,7	5,6	1,792	17,742	0,005
	Yes	8	36,4	29	76,3				
Social Distancing	No	15	68,2	14	36,8	3,6	1,207	11,183	0,038
	Yes	7	31,8	24	63,2				
Wash Hands with soap	No	18	81,8	15	39,5	6,9	1,950	24,415	0,004
	Yes	4	18,2	23	60,5				

Table 5 shows as many as 12 of the 22 people (54.5%) who experienced the infection of COVID-19 had a history of crowd exposure and as many as 10 of the 22 people (45.5%) who were infected COVID-19 did not have a history of crowd exposure. Meanwhile, as many as 8 of 38 people (21.1%) who were not infected COVID-19 had exposed to the crowd, and as many as 30 of 38 people (78.9%) who were nor infected COVID-19 did not have a history of crowd exposure. The Odd Ratio value obtained was 4.5; 95% Confidence Interval 1.431-14.150, and p value <0.05, which means that people who had a history of crowd exposure were 4.5 times more likely to experience COVID-19 than people who did not have a history of crowd exposure.

2 of the 22 people (9.1%) who infected COVID-19 had not been vaccinated at least 2 times, and as many as 20 of the 22 people (90.9%) infected COVID-19 had been vaccinated at least 2 times.

Meanwhile, 2 out of 38 people (5.3%) who were not infected COVID-19 had not been vaccinated at least 2 times, and 36 of 38 people (94.7%) who were not infected COVID-19 had been vaccinated at least 2 times. The OR value obtained was 1.8 with 95% CI 0.235-13,771 and p value > 0.05, which means that there is no significant relationship or effect between vaccine history and the incidence of COVID-19.

2 out of 22 people (9.1%) infected COVID-19 had comorbidities, and 20 of 22 people (90.9%) infected COVID-19 did not have comorbidities. Meanwhile, 1 in 37 people (2.6%) infected COVID-19 had comorbidities, and 37 of 38 people (97.4%) not infected COVID-19 did not have comorbidities. The OR value obtained was 3.7 with 95% CI 0.316-43.365 and p value > 0.05, which means that there was no significant relationship or effect between comorbidities and the incidence of COVID-19.

As many as 14 of the 22 people (63.6%) infected COVID-19 due to not wearing masks properly and correctly when doing activities outside home, and as many as 8 of 22 people (36.4%) infected COVID-19 and had worn masks properly and correctly when doing activities outside home. Meanwhile, as many as 9 out of 38 people (23.7%) infected COVID-19 due to not wearing masks properly and correctly when doing activities outside home, and as many as 29 of 38 people (76.3%) were not infected COVID-19 but wore masks properly and correctly when doing activities outside home. . The odds ratio value is 5.639; the 95% Confidence Interval is 1.792-17.742 and the p-value is <0.05, which means that people who did not wear masks when they were outside the home were at risk of being infected COVID-19, which was 5.6 times more at risk compared to people who wore masks when they were outside home.

15 of the 22 people (68.2%) infected COVID-19 did not apply social distancing, and 7 of 22 people (31.8%) infected COVID-19 applied social distancing. Meanwhile, 14 of 38 people (36.8%) not infected COVID-19 did not apply social distancing, and 24 of 38 people (63.2%) not infected COVID-19 applied social distancing. The odds ratio value is 3.673, the 95% Confidence Interval value is 1.207-11,183, and the p value is <0.05, which means that people without applying social distancing are 3.6 times more likely to be infected with COVID-19 than people who did apply social distances.

18 out of 22 people (18.2%) infected COVID-19 did not wash their hands with soap before and after doing activities, and as many as 4 of 22 (18.2%) infected COVID-19 washed their hands with soap before and after doing activities. Meanwhile, 15 of 38 people (39.5%) not infected COVID-19 did not wash their hands with soap before and after activities, and 23 of 38 people (60.5%) not infected COVID-19 washed their hands with soap before and after doing activities. The odds ratio value is 6.9; the value of 95% Confidence Interval 1,950-24,415, and the p value <0.05, which means that people who did not wash their hands with soap before or after doing activities were 6.9 times more likely to be infected with COVID-19 compared to people who washed their hands with soap before or after doing activities.

Table 6. The results of the logistic regression test for the infection COVID-19 at Pikat Village, Klungkung Regency, Bali 2022

Variable	OR	95% CI		P Value
		Lower	Upper	
Not wearing mask properly and correctly when doing activity outside home	4,425	1,206	16,233	0,025
Not applying social distancing	3,694	1,012	13,480	0,048
Not washing hands before and after doing activities	5,995	1,521	23,613	0,010

From the table above, it can be seen that not wearing mask properly and correctly when doing activities outside home, not applying social distancing and not washing hands with soap before and after activities had a significant relationship to the infection of COVID-19. People who did not wear masks properly and correctly when doing activities outside home were 4.4 times more likely to be infected COVID-19 than people who wore masks properly (OR = 4.425; 95% CI 1.206-16.233). People who did not keep their distance had a 3.7 times greater risk of experiencing the infection of COVID-19 than people who kept their distance (OR = 3.69; 95% CI 1.012-13.480). People who did not wash their hands before and after activities had a 6 times greater risk of experiencing the infection COVID-19 compared to people who washed their hands with soap (OR = 5.99; 95% CI 1.521-23.613).

Discussion

COVID-19 cluster occurred in Pikat Village, Dawan District, Klungkung Regency, Bali. The distribution of incidents was found in five banjar (sub villaged), namely the Gelogor village which was the highest case, Cempaka village, Intaran village, Pangi village and Sente village. Lack of discipline in implementing Health protocols when carrying out daily activities caused the transmission of COVID-19 disease. Many village people left their homes without wearing masks or wearing masks but did not wear them properly and correctly.

Based on the results of the descriptive analysis test, it was found that the percentage of cases of COVID-19 at Pikat village from 60 people investigated were 22 people (36.7%) positive for COVID-19 and from 22 cases, 16 people (72.7%) were people who had close contact with the index case.

Based on gender, there were no significant differences between men and women, namely 45.5% and 54.5%, but the female gender group experienced more cases of COVID-19. Based on the number of infected women more than men but this difference was not significant after statistically analyzed in the bivariate analysis test using the Chi-Square test. The results where the number of women was more likely to be infected than men was not in accordance with the literature which says that men are more likely to be infected than women. Based on a meta-analysis study relating gender with the risk of COVID-19 infection, it is known that men were 28% more at risk of infection than women. Likewise, research on the relationship of sex to mortality shows that men were 1.86% more at risk of dying than women (Biswas, et al, 2020). Men are known to have higher ACE2 expression, this is related to the sexual hormone that makes men more at risk for SARS-CoV-2 infection. ACE2 expression is encoded by a gene found on the X chromosome, females are heterozygous while males are homozygous, thus

potentially increasing the ACE2 expressor. SARS-CoV-2 infection and several other clinical symptoms can be neutralized because women carry the heterozygous X allele which is called sexual diamorphism. The results of the study that was not in accordance with the literature could be due to the imbalance in the number of samples between the gender of men and women involved in this study. Because based on the data the number of men who were the sample of the study was less than that of women.

People infected with COVID-19 were more in the 20-60 years age group (50%) than other age groups. This can be caused by the age being productive. At the productive age, the possibility of being infected with COVID-19 will be greater, this is due to high mobility and activities outside home. The frequency and social interactions of productive groups are also higher. The results of this study contradict the research of Elviani, et al (2021) which said that people aged over 60 years are more at risk for exposure to COVID-19. Elderly people experience a process of decreasing the function of tissues and organs of the body so that they are more susceptible to disease. Organ and immune function had decreased. Generally, elderly people suffer from comorbidities so that their condition is weak and cannot fight infections that enter the body. The elasticity of lung tissue decreases over time. Inflammation that occurs in the elderly can have a big effect and can even cause organ damage.

Based on the analysis of risk factors, there is a relationship between social distancing and the infection of COVID-19 (OR 3,673 and 95% Confidence Interval value 1,207-11,183). People who did not apply social distancing or maintain a distance of at least 1 meter from other people have a 3.6 times greater risk than people who did. These results are in line with the researcher Harahap (2021), adjusting the distance among people, so that the possibility of infecting disease can be lower. The implication is that gathering with large number of people and accumulation of people should be avoided.

Based on the analysis of risk factors, there is a relationship between washing hands with soap before and after carrying out activities with the infection of COVID-19. Washing your hands with soap, either before eating or before starting work, will keep your body healthy and prevent the spread of disease through viruses and bacteria that stick to your hands. This is in line with the results of Yulianthi's research (2021) that there is a significant relationship between hand washing and the infection of COVID-19 transmission.

The results of this study indicate that a lack of discipline in implementing health protocols can increase the risk of being infected with COVID-19. There is a need for cooperation between the community, Community Health Center officers, village officials so that the discipline in implementing Health protocol can be increased in order to prevent the increase in the number of COVID-19 cases in the future.

This study has limitations that may affect the results and conclusion found, namely the small number of samples and the characteristics of the case group and control group are not matched so that it does not describe the real situation. In future studies, it is hoped that close contacts can be obtained in each case so that the results of the investigation can be more useful in preventing wider transmission in the future.

Conclusion

Based on the results of the patient's PCR investigation and laboratory examination, there has been a COVID-19 cluster in Pikat Village, Dawan District, Klungkung Regency. This case has occurred since January 21, 2022.

The number of cases investigated in the Pikat Village cluster was 22 cases, of which 16 people (72.7%) were people who had close contact with the index case. The cases were spread across 5 hamlets, namely Gelogor Hamlet, Cempaka Hamlet, Intaran Hamlet, Buug Hamlet, and Sente Hamlet. The Pikat Village Cluster starts from January 21, 2022 to February 1, 2022 and does not rule out the possibility of spreading it further.

The most cases were found on January 26, 2022. The source of transmission based on interview results came from 1 person who was an index case who had the opportunity to contract COVID-19 while attending a traditional ceremony. Then it is transmitted to family and friends (generation 1), then generation 1 is transmitted to generation 2.

The majority of cases have symptoms of cough, runny nose / nasal congestion and are asymptomatic.

Risk factors related to the source of transmission of COVID-19 events are a history of exposure to crowds, not wearing masks properly and correctly when outside the home, not implementing social distancing, and not washing hands with soap before and after activities.

Socialization and implementation of health protocols is very important to prevent similar incidents. Strengthening the surveillance system is also very necessary so that it is hoped that it can detect outbreaks early and respond to future outbreaks.

Acknowledgements

References

Alhidayati, et.at. 2022. Penyuluhan Etika Batuk dan Bersin dimasa Pandemi Covid-19 pada Anak-anak Panti Asuhan Al-Akbar Kota Pekanbaru. ARSY: Jurnal Aplikasi Riset kepada Masyarakat, 3(1), 12-18. https://doi.org/10.55583/arsy.v3i1.277.

Arikunto, S. 2013. prosedur penelitian suatu pendekatan praktik (edisi revisi). Jakarta: Rineka Cipta.

Biswas, et.al. 2020. Association of Sex, Age, and Comorbidities with Mortality in COVID19 Patients: A Systematic Review and Meta-Analysis. In Intervirology (Vol. 64, Issue 1). https://doi.org/10.1159/000512592

Cascella, M., et.al, 2020. Features, Evaluation, and Treatment of Coronavirus (COVID-19). NCBI Bookshelf. A Service of the National Library of Medicine, National Institutes of Health. Retrieved from https://www.ncbi.nlm.nih.gov/books/NBK554776/?report=printable Erlich.2020. COVID-19

(Novel Coronavirus). (n.d.). Retrieved May 11, 2020, from https://www.dynamed.com/condition/COVID-19-novel-coronavirus/

Elviani, et.al. 2021. Gambaran Usia pada Kejadian Covid-19. Jambi Medical Jurnal, 9(2), 204–209. https://doi.org/10.22437/jmj.v9i1.112 63

Gennaro, F. Di, Pizzol, D., Marotta, C., Antunes, M., Racalbuto, V., Veronese, N., & Smith, L. (2020). Coronavirus Diseases (COVID-19) Current Status and Future Perspectives: A Narrative Review. *International Journal of Environmental Research and Public HealthEnvironmental Research and Public Health,* 17(2690), 1–11. https://doi.org/10.3390/ijerph170 82690

Handayani, D., Hadi, D. R., Isbaniah, F., Burhan, E., & Agustin, H. (2020). Penyakit Virus Corona 2019. *Jurnal Respirologi Indonesia,* 40(2), 119–129. https://doi.org/10.36497/jri.v40i2.101.

Hasudungan, L. 2017. Pengaruh Faktor Pendidikan, Umur Dan Pengalaman Kerja Terhadap Kinerja Apatur Sipil Negara (ASN). *Jurnal Ilmiah Ekonomi Bisnis,* Vol 3, No 3, November 2017, hal 301 - 310.

Kemenkes, R. 2020. Pedoman Pencegahan dan Pengendalian Coronavirus Disease (COVID19). Jakarta: Kementrian Kesehatan Republik Indonesia.

Kumar, et.al. 2020. Novelty in the Gut: A Systematic Review Analysis of the Gastrointestinal Manifestations of COVID-19. *BMJ Open Gastroenterology,* 7(e000417), 1– 9. https://doi.org/10.1136/bmjgast2020-000417

Lai, et.al, 2020. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and coronavirus disease-2019 (COVID-19): The epidemic and the challenges. *Int J Antimicrob Agents.* 2020;55(3):105924. doi: 10.1016/j.ijantimicag.2020.105924. [PubMed: 32081636].

Lingeswaran, et.al. 2020. Inflammation, Immunity and Immunogenetics in COVID-19: A Narrative Review. *Indian Journal of Clinical Biochemistry,* 35(3), 260–273. https://doi.org/10.1007/s12291- 020-00897-3

Notoadmodjo. 2010. Konsep perilaku kesehatan. Promosi kesehatan, Teori dan Aplikasi. Jakarta: Rineka Cipta.

Rifiana, A. J. & Suharyanto, T. Hubungan Diabetes Mellitus dan Hipertensi Dengan Kejadian Corona Virus Deases-19 (COVID-19) Di Wisma Atlit Tahun 2020. J. Penelit. 19, 1–15 (2020).

Sarvasti, D. 2020. Pengaruh Gender dan Manifestasi Kardiovaskuler pada COVID-1919. Indonesia J Cardiol, 41:125-135.

Siagian, T. H. Mencari Kelompok Beresiko Tinggi Terinfeksi Virus Corona Dengan Discourse Network Analysis. *J. Kebijak. Kesehat. Indones*. 09, 98 (2020).

Sugiyono. 2015. Metode Penelitian Kombinasi (Mix Method). Bandung: Alfabeta. WHO. 2020. Situation Report. Https://www.Who,int/emergencies/diseases/novelcoronavirus2019/situation-report.

WHO.2020.Pertanyaan jawaban terkait COVID-19 untuk publik.(n.d.). Retrieved April 28, 2020, from https://www.who.int/indonesia/news/novel-coronavirus/qa-for-public

Zhang, H., Penninger, J. M., Li, Y., Zhong, N., & Slutsky, A. S. (2020). Angiotensin - Converting Enzyme 2 (ACE2) as a SARS - CoV - 2 Receptor: Molecular Mechanisms and Potential Therapeutic Target. *Intensive Care Medicine,* 46(4), 586–590. https://doi.org/10.1007/s00134- 020-05985-9