ORIGINAL ARTICLE

Evaluation of the COVID-19 Surveillance Indicators at The Peak of The First Wave in January-February 2021 in a District of West Java Province, Indonesia

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ABSTRACT

Introduction: Indonesia experienced the highest peak for COVID-19 infection in January-February 2021. The surveillance indicators of COVID-19 responses must be evaluated in order to predict the next increase in cases. The purpose of the study was to assess COVID-19 control implementation using surveillance indicators from January to February 2021. **Methods:** A retrospective study has been applied to a total of 219 cases recorded during January-February 2021, extracting data from Routine Surveillance in Kuningan District. Surveillance indicators and Case Fatality Rate (CFR) were analyzed descriptively. Comparison of recording the number of Contact Tracing Application (SILACAK Application) cases and manual reports with independent t-test using Stata. **Results:** The number of daily cases from weeks 1 and 3 that are inputted SILACAK Application is less than manual data. The ratio of confirmed cases to close contacts is 1:2. On average 33.4%, the percentage of confirmed cases spread from close contact. On an average of 98.6%, close contacts of new cases are monitored for 14 days on average only 16 cases of close contacts each week whose clusters can be identified. CFR is 2.32%, Comparison of recordings (p=0.867). **Conclusion:** Surveillance indicators have not been achieved optimally in data synchronization, the ratio of the number of cases with close contacts and identification of case clusters and there is no significant difference between manual recording and SILACAK App, while monitoring has been running optimally and has been able to reduce the CFR. The surveillance system still needs to improve the capacity and quality of contact tracing.

Keywords: Surveillance, Indicator, COVID-19

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INTRODUCTION

COVID-19 is caused by the Sars-Cov 2 virus, which is communicated from person to person. It first appeared in China and then expanded to other nations across the world. (1). According to Humanitarian Data Exchange (HDX), currently, it has been infected more than 200 countries around the world (2). As of June 2021, it has grown very rapidly with 105,394,301 confirmed cases spread across 223 countries, and 2,302,302 people died due to exposure to Covid-19 (3). COVID-19 is quickly spreading in highly populated countries such as Indonesia, the world's fourth most populous country (with a population of 274 million people). With a fluctuating number of cases, Indonesia is one of the countries afflicted by COVID-19(4). Indonesia has 1.166.079 Covid-19 cases as of January 20, 2021, putting it in fourth place in the world for the number of COVID-19 cases. While in Southeast Asia, Indonesia stands in the first position with the most recorded cases. Followed by the Philippines with a total of 500,577 cases and the State of Malaysia with a total of 158,434 cases (5).

Based on an evaluation using RT-PCR, the first instance of COVID-19 in Indonesia was discovered on March 2, 2020, with two cases from Depok City, West Java Province. After on, it was found that there were confirmed cases, since that incident, the City of Jakarta has finally become the epicenter of the epidemic in the country, accounting for the majority of COVID-19 known in Indonesia with a fatality rate reached up to 25% in September 2020. According to the case-fatality data, Indonesia had a significant increase in case fatalities from January to October 2020, compared to the commencement of the COVID-19 outbreak. This

indicated that SARS-CoV-2 transmission began at least two months before official detection. (6). Indonesia reported the heaviest number of deaths on September 20, 2020, amounting to 9,553 victims among Southeast Asian countries. This is related to several determinants of health, including biochemical factors and health comorbidities (7).

The quick transmission pattern of COVID-19 has had an influence on the distribution of cases throughout Indonesia, with all provinces reporting a continuous increase in confirmed COVID-19 cases, with some exhibiting a dramatic increase in the first six months. Confirmed cases were focused only in West Java, Jakarta, and Banten within the first week. New confirmed cases were reported in East Kalimantan the following week, and just a few days later, the spread of additional infections accelerated in both the western and eastern areas of Indonesia, with 18 new provinces reporting cases. Confirmed cases were reported in all provinces in the sixth week (9). As of February 2021, 510 districts/ cities in 34 provinces were exposed to COVID- 19 in Indonesia. Data from the COVID-19 Task Force reported that until February 2021, COVID-19 cases in Indonesia were increasing day by day, the number of positive cases reached 1,166,079 cases, 963,028 cases recovered and 31,763 deaths due to Covid-19 (12,13).

With a pattern of rapid expansion, COVID-19 cases in Indonesia peaked in January 2021 and extended to various provinces, including West Java Province, growing by 27.5 percent from 11 to 17 January 2021, the biggest percentage rise in Covid-19 cases in Indonesia during the Covid-19 pandemic. West Java province is divided into three regions, with an increase in cases of 4,929 from 10,088 to 15,017. All regencies/cities in the West Java Province have found positive cases of COVID-19 through February 2021. A large number of cases in diverse clusters of schools, Islamic boarding institutions, workplaces, and families supports this. In Kuningan Regency, a COVID-19 cluster was formed by an Islamic residential school.

Contact tracing from the first case, namely March to September 2020 in Kuningan Regency was carried out by Community Health Center Surveillance officers with results <40% of each contact could be traced by officers. This achievement is still below compared to the national surveillance indicator target of 80%. In September 2020 to increase contact tracing capacity, National Disaster Board provided contact tracing assistance in 51 Regencies and Cities in Indonesia including Kuningan Regency in the form of support for providing incentives for the provision of Contact Tracer Officers. The number of search personnel recruited was 89 people in 2020 and increased in 2021 by 85 people so that a total of 175 people were assigned to 26 Public Health Centers.

The evaluation of the achievement of surveillance indicators has not been carried out, causing control efforts to not be optimal, this can be seen from the continuous increase in cases in the January-February 2021 period. Evaluation of surveillance indicators during peak cases is an instrument used in controlling the COVID-19 Pandemic. Therefore, evaluation research is needed from the contact tracing assistance program from National Board for Disaster Management through the size of the Surveillance Indicator. This is necessary to suppress the rate of transmission of COVID-19 in the Kuningan Regency.

MATERIALS AND METHODS

Study design
This investigation was conducted utilizing a retrospective study.

Data Source
Data extracted from regular surveillance on Covid-19 District Health Office, Kuningan, Indonesia from January to February 2021.

Study location
Kuningan District, West Java Province, Indonesia was the study area.

Sampling
The subject was a confirmed COVID-19 patient and a close relative who was admitted to the District Health Office in Kuningan. A total sampling strategy was used with 219 patients, and the data were collected retrospectively.

Instrument
The instrument was used check list of observation of surveillance indicators, such as daily confirmed cases and the number of daily confirmed cases entered into the Ministry of Health's Contact Tracing Information System, which are among the data acquired from the weekly report. Confirmation case ratio and the number of close contacts, number, and percentage of confirmed cases which were identified close contacts and start quarantined in time <72 hours. After new cases are confirmed, the number and percentage of close contacts of new cases monitored for 14 days since the last contact, number and confirmed cases derived from close contact list and identifiable cluster group in the last 2 weeks, and case fatality rate.

Data Analysis
Statistical data analysis with independent t-test using Stata software version 14, to determine the Surveillance Indicators, Case Fatality Rate and the comparison of recording the number of cases between Contact Tracing Information System and manual reports.

Ethical Consideration:
Ethical Clearence number No. 01/EP/STIKKU/2022.

RESULTS

The development of surveillance indicators is part of a larger effort to accelerate COVID-19 prevention and control measures and assess surveillance success. In Indonesia, surveillance indicators include 1) electronic and manual case recording synchronization., 2) Contact tracing including contact ratio between confirmed cases and close contacts with ratio 1:15 targeted, percentage of confirmed cases which was identified close contacts and start quarantined in time <72 hours after new cases confirmed with targeted by >80%, proportion of confirmed cases with close contacts who were tested within 72 hours since with targeted by >80%. 3) Isolation and quarantine indicator including percentage of close contacts of new cases monitored for 14 days since the last contact with targeted by >80%, all confirmed cases derived from close contact list and identifiable cluster group in the last 2 weeks and Case Fatality Rate group. All surveillance indicators indicate that new case investigations are carried out quickly enough to minimize the incidence of secondary cases and demonstrate adequate case and contact tracing capacity.

The indicators evaluated in this study are tracing, quarantine, and isolation indicators selected based on their impact on pandemic control. To be useful in decision making, the data collected must be accurate and timely, so that indicators can be responsive to epidemiological changes.

Based on table I, the results of the study show indicators in surveillance, namely the comparison of recording the number of cases between the Contact Tracing Information System (SILACAK Application) and manual recording data conducted by the Kuningan District Health Office, such as the average number of cases entered in the case tracking information system during 6 weeks more, namely 181.83 cases compared to the daily manual recording by the Health Service which was 175.83 cases. Significant comparisons are seen in epidemiological W1 and W3 because the data entered in SILACAK is far less than the daily data recorded by the Health Office.

The next indicator is contact tracing including: confirmed cases with close contacts which includes the ratio between confirmed cases and close contacts, i.e., on average, 1 confirmed case has 2 close contacts, this is far below the established standard, i.e each confirmed case must be traceable to 15 close contacts who can be tracked and interviewed. Meanwhile, the percentage of confirmed cases that have close contacts is on average 66.5% greater than the percentage of confirmed cases that do not have close contacts, which is 33.48%. The next indicator is the proportion of close contacts who were tested within 72 hours since confirmed cases were obtained at an average of 66.53%, this has not met the supposed target of 80%.

Table I: Descriptive analysis of surveillance indicators COVID-19 in January-February 2021 in Kuningan Regency.

Surveillance Indicators	Week of Epidemiology						Total	Average
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6		
Comparison of recording the number of case tracking								
The number of cases entered in the Contact Tracing information system (SILACAK)	159	175	170	189	179	219	1,091	181.83
The number of daily cases recorded (manual) by the Health Office.	221	149	305	138	184	58	1,055	175.83
Tracing Indicators								
Contact ratio between confirmed cases and close contacts	2.4	2	2.3	1.5	3	1.24	12.44	2.07
The percentage of confirmed cases that have close contacts	68.6	75.4	73.5	63.5	64.2	53.9	399.10	66.52
The percentage of confirmed cases that do not have close contacts	31.45	24.57	26.47	36.51	35.75	46.12	200.87	33.48
The proportion of confirmed cases with close contacts who were tested within 72 hourssince confirmed cases were obtained	68.6	75.4	73.5	63.5	64.2	53.9	399.10	66.52
The proportion of confirmation cases do nothave close contacts who were tested within 72 hours since confirmed cases were obtained	31.45	24.57	26.47	36.51	35.75	46.12	200.87	33.48
Isolation and Quarantine Indicators								
Close contact of new cases monitored for 14 days since the last contact								
Percentage Close Contact with Symptoms	1.75	1.18	1.27	0.68	1.96	0.77	7.60	1.27
Percentage Close Contact with Died	0.00	0.00	0.00	0.00	0.03	0.05	0.09	0.01
Percentage Close Contact with referred to health care facilities	0.00	0.00	0.04	0.07	0.07	0.10	0.28	0.05
Percentage Close Contact with Healthy	98.25	98.82	98.69	99.25	97.94	99.08	592.03	98.67
Confirmation cases come from close contact lists and the Cluster Group	0.00	8.00	35.00	21.00	28.00	8.00	100	16.67
Case Fatality Rate Group	1.97	1.1	4.87	3.21	1.54	1.23	13.92	2.32

SILACAK : Sistem Informasi Pelacakan Kasus (Contact Tracing information system)

Another indicator is the achievement of quarantine and isolation, namely close contact of new cases monitored for 14 days since last contact consisting of groups who are symptomatic, died, referred to health care facilities, and are healthy, i.e., most are in good health on average 98.67% this is in accordance with a set target of 80%. The next indicator is confirmation cases come from close contact lists and the Cluster Group can be identified, which is only an average of 16 cases (8.8%) of the average number of cases recorded, this shows that it is still far below the standard, which is only 80%. The average case fatality rate for 6 weeks is 2.32%, which is less than the national average of 2.8% CFR.

Based on table II, the results of the analysis with independent t-test showed that the comparison of the number of cases that were inputted in SILACAK Application was not significantly different from the number of confirmed cases that were inputted in the daily manual report with p-value = 0.0867 and 95% CI (141.94-215.72).

Table II: Independent t test analysis of the number of cases entered in the Contact Tracing Information System (SILACAK Application) and the number of daily cases recorded by the Health Office on Comparison of recording number of cases entered COVID-19 in January-February 2021 in Kuningan Regency.

Group	Mean	SD	Mean	p	95% CI	
					Lower	Upper
Comparison of recording the number of cases						
The number of cases entered in the Contact Tracing Information System (SILACAK Application)	181.83	20.73	78,83	0.867	141.942	215.724
The number of daily cases recorded by the Health Office.	175.83	83.45				

SILACAK : Sistem Informasi Pelacakan Kasus (Contact Tracing information system), (SD: standard deviation; CI: confident interval

DISCUSSION

The objectives of surveillance for a specific disease or risk factor should dictate the system attributes, such as timeliness, sensitivity, and representativeness, and surveillance managers should regularly evaluate systems to ensure that they are efficient and continue to fulfill important public health functions (16). In an effort to control COVID-19, several monitoring indicators have been set that can be calculated as a measure of control success. Surveillance data must be reliable and timely in order for Covid-19 interventions to be effective.

The findings of the study show that the recording of the surveillance information system, namely SILACAK Application, created by the Ministry of Health, is inconsistent with manual data recorded by the Health Service. This happens because the recording in the SILACAK Application system is carried out by contact tracer officers specially assigned by the National Disaster Management Agency (BNPB) while the manual recording of daily cases is carried out by Public Health Center surveillance officers. The contact tracer officer reports the case directly to SILACAK Application then after that submits the recorded data manually to the Public Health Center (Puskesmas) surveillance officer, in this process, there is the potential for missing data so that the data does not match.

In terms of obstacles, money, and training limit the quality of monitoring in developing countries. Under-ascertainment/under-reporting, lack of timeliness, and completeness of surveillance data are the key drawbacks of surveillance. Finally, surveillance is critical for containing the Covid-19 epidemic. Improving Covid-19 surveillance is critical for detecting cases quickly, limiting transmission, and putting an end to the pandemic. (16). COVID-19 surveillance datasets are of poor quality, limiting their potential to guide wise decisions and conduct worthwhile research (17).

Indicators of tracking achievement include the ratio between confirmed cases and close contacts which is still below the established standard, namely each confirmed case must be traceable as many as 15 close contacts who can be tracked and interviewed, the low rate of achievement of confirmed cases with close contacts <80% and close contacts who tested <72 hours has not reached the target indicator that is <80%. This is due to the limited capacity and ability of contact tracers in tracing cases, the ability to communicate with the public, finding new cases from close contacts, and the weakness of epi-contact analysis in epidemiological investigations.

Case investigation and contact tracing are critical public health tools for containing and preventing infectious disease transmission (18). The ultimate purpose of contact tracing is to reduce and stop the virus's spread as quickly as possible. The importance of contact tracer having the ability to move to track the whereabouts of cases can be used to control spikes in cases (19). Contact tracers often reach individuals who are unaware of potential exposure therefore, their approach must include sensitivity and patience to explain the benefit of contact tracing for themselves and their community. Good communication, this include having culture sensitivity and addressing fear and stigma when individuals have tenuous immigrant status. Contact tracing must be conducted in communities preferred languages to good communication (19,20). Contact tracer also must have empathy, maintain confidentiality and rapidly build trust, because the rule of tracer is not only to interview and search contacts but also to share crucial resources and perform crisis counseling.(19) The performance of the contact tracer is influenced by the level of education, type of education and experience in conducting investigations because all of these will affect knowledge. Contact tracers are familiar with these responsibilities and activities firsthand. Those that work in contact tracing must be able to share expertise and

learn from one another (20).

Close contact quarantine is important to prevent transmission from those who may be a source of asymptomatic transmission. Quarantine should be carried out as soon as the contact is identified, without waiting for the results of laboratory tests. Based on the study's findings, the majority of new patients' close contacts were followed for 14 days, with the majority of them falling into the healthy group at 98.67 percent. This is in line with the signs and symptoms of COVID-19, which are mostly asymptomatic so that patients are able to maintain their health status. In addition, monitoring by contact tracers also contributes to promoting the health status of isolated close contacts. Contact tracers assist every day through messaging applications to monitor health conditions or meet in person to measure physical conditions such as body temperature, blood pressure, and oxygen saturation.

Because the peak in infectiousness comes during the pre-symptomatic period, contact tracing allows for early detection and isolation of secondary cases, which is very crucial (21). Contact tracer monitoring using a digital application can improve the high path and quick return time. Although the spontaneous follow-up rate of these alerting cases is modest, the app detects around close encounters per main simulated illness, with a large percentage of these being contacts with strangers. (22). Contact tracers also must have empathy, maintain confidentiality and rapidly build trust, because the rule of tracer is not only to interview and search contacts but also to share crucial resources and perform crisis counseling (19).

Success in monitoring confirmed cases and close contacts in quarantine and isolation affects the Case Fatality Rate in the community. The CFR from the research results shows that it is below the national average of 2.32%, this is still below the national average of 2.8% CFR. Contact tracing and efficient quarantine can help to cut down on the number of illnesses and the Case Fatality Rate (23). Contact tracing is critical not just for preventing transmission but also for lowering case fatality rates (21).
Confirmation data sources from tracing results originating from cases, data sources for SILACAK, and manual daily reports originating from the same source so that they are not significantly different. In addition, the data analyzed are not random and the number of samples is small. The data analyzed were all data available at the Public Health Center during the peak period of January-February 2021 cases which did not apply inclusion and exclusion criteria so this became a limitation in this study.

CONCLUSION

Surveillance indicators have not been achieved optimally in data synchronization, the ratio of the number of cases with close contacts, and identification of case clusters, while monitoring has been running optimally and has been able to reduce the case fatality rate. The number of confirmed COVID-19 instances listed in SILACAK Application and manual report recording are not significantly different. The unsynchronized Covid-19 data indicate a low level of surveillance quality. The capability and quality of contact tracing in surveillance systems still need to be improved.

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