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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

Abstract

Introduction: Indonesia experienced the highest peak for COVID-19 infection in January-February 2021. Evaluation of the surveillance indicators of COVID-19 responses is required for anticipation of next increase of COVID-19 cases. The purpose of thestudy was to evaluate the implementation of COVID-19 control based on surveillance indicators for period January-February 2021. **Method:** 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 SILACAK cases and manual reports with independent t-test using Stata.14. **Results:** The number of daily cases from week 1 and 3 that are inputted SILACAK 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. 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). **Conclusions:** 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, while monitoring has been running optimally and has been able to reduce the case fatality rate. The surveillance system still needs to improve the capacity and quality of contact tracing.

Key words: Surveillance, Indicator, COVID-19

Introduction

COVID-19 is caused by the Sars-Cov 2 virus which is transmitted from human to human and has started spreading widely in China and later to other countries around 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). The spread of COVID-19 is growing rapidly in densely populated countries including Indonesia,. which is the fourth most populous country (population 274 million) in the world. Indonesia is one of the countries that has been affected by COVID-19, with a fluctuating number of cases(4). The number of Covid-19 cases in Indonesia up-to January 20, 2021, are 1.166.079, puts Indonesia at the 4th position on the most COVID-19 cases in the world. While in Southeast Asia, Indonesia stands 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).

The first case of COVID-19 in Indonesia was detected on March 2, 2020, with two case from Depok City, West Java Province based on an examination using RT-PCR. 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 knownin Indonesia with fatality rate reached up-to 25% in September 2020. According to the case fatality record, in January to October 2020, Indonesia experienced a substantial increase in relation to the start of the COVID-19 epidemic. This showed that the transmission of SARS- CoV-2 began to develop at least two months before official detection (6). Indonesia reported the heaviest number of deaths on September 20, 2020, amounting to 9,553 victimsamong Southeast Asian countries. This is related to several determinants of health, including biochemical factors and health comorbidities (7).

One of the causes of the rapid spread of COVID-19 is transmission from people who are asymptomatic. Most individuals with new infections are asymptomatic and have no fever at the time of diagnosis. Slightly different is the case with severe acute respiratory syndrome (SARS) where most of the sufferers show symptoms (symptomatic) (8,9). Transmission of SARS-CoV-2 can occur through direct contact with touch, indirect contact, or close contact with an infected person through secretions such as saliva and respiratory tract secretions or respiratory droplets released when an

infected person coughs, sneezes, talks, or sing (10). Air and aerosol routes are more opportunistic than normal routes, which means that air routes may be very relevant for certain situations(11)

The pattern of rapid transmission of COVID-19 has an impact on the spreading of cases to allprovinces in Indonesia, experiencing a consistent increase in confirmed cases of COVID-19 with some showing a sharp increase in the first six months. During the first week, confirmed cases were concentrated only in West Java, Jakarta and Banten region. The following week, new confirmed cases were reported in East Kalimantan, and a few days later the spread of new infections increased rapidly in both western and eastern parts of Indonesia, adding 18 new provinces with reported cases. In the sixth week, confirmed cases were recorded in all provinces (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 the pattern of rapid expansion of COVID-19 cases in Indonesia peaked in the January 2021 and spread to various provinces including West Java Province, increasing by 27.5% during 11-17 January 2021 and this figure is the highest percentage increase in Covid-19 cases during the Covid-19 pandemic in Indonesia. West Java province is included in 3 regions with an increase in cases reaching 4,929 cases from 10,088 cases

to 15,017 cases. Until February 2021, all regencies/cities in the West Java Province have found positive cases of COVID-19. This is supported by the high number of cases in various clusters of schools, Islamic boarding schools, workplaces and families. An Islamic boarding school contributed as COVID-19 clusterin Kuningan Regency.

According to COVID-19 data, total 3,070 confirmed positive cases were found in Kunigan regency until February 2021. Among them 2,654 cases were confirmed discarded cases, and 61 of them were died. Kuningan Regency was a new cluster of COVID-19 cases emerged, namely the education cluster or Islamic boarding school. One of them is the Husnul Khotimah Islamic Boarding School, located in Manis Kidul Village, Kuningan Regency. During the periodof September 13, 2020, this Islamic boarding school conducted a PCR test on 1,200 students who came with symptoms of cough, flu, and fever, 3 of whom were confirmed positive for COVID-19. Following the PCR test, 46 people were positive for COVID-19. So that until October2020 the total positive cases of COVID-19 at Husnul Khotimah Islamic Boarding School in Kuningan Regency reached 412 positive cases of COVID-19.

The spread of COVID-19 cases can be minimized by breaking the chain of transmission, whichcan be done by early detection, isolation, vaccination, basic protection by washing hands with soap), perform safety measurements (maintaining social distance, wearing masks, spraying disinfection in places public places and screening for in-person visits). Ensuring effective and efficient contact tracing and tracking (case

investigations and outbreak investigations), as well as being a facility for empowering healthy communities (14,15).

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% each contact could be traced by officers. This achievement is still below compared to national surveillance indicator target of 80%. In September 2020 to increase contact tracing capacity, National Disaster Board providedcontact tracing assistance in 51 Regencies and Cities in Indonesia including Kuningan Regencyin 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 Center.

This indicates that the rate of Covid-19 is increasing and transmission in the community continues and efforts to slow transmission or stop it look less effective. The strategy needed is for standardized disease spread (containment), namely early detection, preventing the spread and expanding the area, and trying not to transmit to communities that are the main focus in controlling the COVID-19 pandemic. The three keywords in this covid-19 epidemiological surveillance are to detect (early detection), to prevent (Prevention) and to countermeasures (Response through Isolation and Quarantine Measures). The main objective of Covid-19 epidemiological surveillance is to break the chain of transmission, spread

of covid-19 cases and manage pandemic risk by implementing it through Mapping of Transmission Levels, Control Strategies and Control Indicators, Epidemiological Investigations and Contact Tracing, Responding through Isolation Measures and Quarantine, Surveillance of cases in closed populations (Close Population)

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. Therefore, evaluation research is needed from the contact tracing assistance program from BNPB through the size of the Surveillance Indicator. This is necessary to suppress the rate of transmission of COVID-19 in Kuningan Regency.

Material and Methods

This research was conducted using a retrospective study with data extraction from routine surveillance Covid-19 in Kuningan District Health Office. The subject were confirmed COVID-19 patient an close contact who were admitted at District Health office Kuningan from January-February 2021. The sampling technique was carried out using a total sampling method with 219 patient and taken retrospectively. Data obtained from weekly report include surveillance indicators, namely daily confirmed cases and the number of daily confirmed cases inputted into the Case Tracing Information System (SILACAK : Sistem Informasi

Pelacakan Kasus) Ministry of Health. Confirmation case ratio and number of close contacts, number and percentage of confirmed cases which was identified close contacts and start quarantined in time <72 hours. After new cases confirmed, number and percentage of close contacts of new cases monitored for 14 days since last contact, number and confirmed cases derived from close contact list andidentifiable cluster group in the last 2 weeks and case fatality rate. 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 SILACAK and manual reports.

Result:

The determination of surveillance indicators is an effort to strengthen efforts to accelerate the prevention and control of COVID-19 and evaluate success of surveillance. The surveillance indicators in Indonesia are 1) synchronization of case recording electronically and manually, 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 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 1, the results of the study show indicators in surveillance, namely thecomparison of recording the number of cases between the Case Tracing Information System (Sistem Informasi Pelacakan Kasus/SILACAK) 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 during6 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 andW3 because the data entered in SILACAK is far less than the daily data recorded by the HealthOffice.

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 confirmedcases 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 anaverage of 66.53%, this has not met the supposed target of 80%.

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 average98.67% this is in accordance with a set target of 80%. The next indicator is confirmation casescome from close contact lists and the Cluster Group can be identified, which is only an averageof 16 cases (8.8%) of the average number of cases recorded, this shows that it is still far belowthe standard, which is only 80%. The average case fatality rate for 6 weeks is 2.32%, which isless than the national average of 2.8% CFR.

Based on table 2. the results of the analysis with independent t-test showed that the comparison of the number of cases that were inputted in SILACAK 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)

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 fulfil important public health function (16). In an effort to control COVID-19, several monitoring indicators have been set that can be calculated as a measure of control success. Timely and accurate of surveillance data is an essential element for effective Covid-19 interventions.

The results of the study indicate that there is an inconsistency in the recording of the surveillance information system, namely SILACAK which was made by the Ministry of Health with manual data recorded by the Health Service. This happens because the recording in theSILACAK system is carried out by contact tracer officers specially assigned by the National Disaster Management Agency (BNPB) while manual recording of daily cases is carried out by Public Health Center surveillance officers. The contact tracer officer reports the case directly to SILACAK 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.

Regarding challenges, the quality of surveillance in developing countries is constrained by resources and training. The main limitations of

surveillance are under-ascertainment/under-reporting, lack of timeliness and completeness of surveillance data. In conclusion, surveillance is a cornerstone for controlling Covid-19 pandemic. Enhancing Covid-19 surveillance is vital for rapid cases detection, containing spread & ending pandemic (16). The low quality of COVID-19 surveillance datasets limits its usability to inform good decisions and perform useful 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 <72hours 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 fundamental public health strategies for controllingand preventing the spread of infectious diseases (18). The ultimate goal of contact tracing is to quickly reduce and stop the transmission of the virus. The importance of contact tracerhaving 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 togood 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 contactsbut 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 have first-hand knowledge of these roles and practices. Those who do the work of contact tracingneed to be able to learn from each other and to generate knowledge (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. The achievement of quarantine and isolation indicators based on the results of the study showed that most of theclose contacts of new cases had been monitored for 14 days with the result that most of themwas 98.67% in the healthy category. 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.

Contact tracing achieves the early detection and isolation of secondary cases which are particularly important given that the peak in infectiousness occurs during the pre-symptomatic phase (21). Monitoring by Contact tracer using a digital application can increase the high path and fast turnaround time. The app detects about 6.3 close-contacts per primary simulated infection, a significant percentage of being contacts with strangers, although the spontaneousfollow-up rate of these notified cases is low (22). 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).

Success in monitoring confirmed cases and close contacts in quarantine and isolation affectsthe 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 effective quarantine can reduce the number of infections and the Case Fatality Rate (23). Comprehensive contact tracing is instrumental not only to curtailing transmission but also to reducing 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 Puskesmas during the peak period of January-February 2021 cases which did not apply inclusion and exclusion criteria so that this became a limitation in this study.

Conclusions and recommendations:

Surveillance indicators have not been achieved optimally in data synchronization, the ratio ofthe 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. There is no significant difference between the number of confirmed COVID-19 cases included in SILACAK and manual report recording. The unsynchronized Covid-19 data show low surveillance quality. The surveillance systems still need to improve the capacity and quality of contact tracing.

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MJMHS 2021 1005

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MJMHS 2021 1005

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PAGE 1

PAGE 2

PAGE 3

PAGE 4

PAGE 5

PAGE 6

PAGE 7

PAGE 8

PAGE 9

PAGE 10

PAGE 11

PAGE 12

PAGE 13

PAGE 14

PAGE 15

PAGE 16

PAGE 17

PAGE 18

PAGE 19