# READINESS OF COMMUNITY HEALTH CENTER TO SUPPORT SCHOOL REOPENING POLICY AT THE FIRST WAVE OF COVID-19 PANDEMIC: INDONESIA CONTEXT

Siti Masitoh[1], Tin Afifah[1], Heny Lestary[2], Sugiharti[2], Novianti[2], Rachmalina Soerachman[1] and Harimat Hendarwan[1]

[1]National Research and Innovation Agency, Central Jakarta, Indonesia; [2]Health Policy Agency Ministry of Health, Jakarta, Indonesia

**Abstract.** Indonesia has reopened schools on July 2020 during the first wave of the pandemic although the number of cases of COVID-19 among children was quite high, around 12.3% of the total cases, of which 9.5% were among school-aged children (6-18 years). This policy must be a concern of all sectors, especially the health sector through the community health center, which has the responsibility to control and prevent the transmission of COVID-19 in its working area, including at school. This study aimed to determine the readiness of the community health center to support the reopening of schools during the COVID-19 pandemic. The study was held from 13 October to 9 November 2020 and was conducted in 512 community health centers in 425 regencies/cities using questioners prepared by Google Forms. The level of readiness was obtained based on the readiness index of community health center that consists of 18 indicators. The readiness was determined by using the cut-off values obtained from the calculation of the receiver operating characteristic (ROC) analysis. Community health center as that had an index value of 0.8882 was considered ready and if the values was <0.8882, community health center was considered not ready. The result of the study showed that only 37.7% of community health center are ready to support school reopening. Community health center in urban/rural areas have higher readiness (41.1%) compared to community health center in remote areas (30.2%) ($p$=0.030) and very remote areas (23.1%) ($p$=0.082). It can be concluded that the readiness of community health center to support school reopening, especially to monitor and supervise schools in the pandemic era, still needs to be improved.

**Keywords:** readiness, community health center, reopening schools, childhood health, COVID-19

Correspondence: Siti Masitoh. National Research and Innovation Agency, B.J Habibie Building, M.H. Thamrin Street No. 8, Central Jakarta 10340, Indonesia
Tel: +62 87737605188 E-mail: siti.masitoh1726@gmail.com

## INTRODUCTION

The World Health Organization (WHO) has declared corona virus disease 2019 (COVID-19) as a pandemic since 11 March 2020 (WHO, 2020). COVID-19 cases have been increasing rapidly and has spread to various countries in a short time, including Indonesia. The first case in Indonesia was reported on 2 March 2020 (MOH RI, 2020b) and number of cases are increasing and spreading rapidly in Indonesia. At the beginning of this survey, the number of cases had reached 116,871 with 5,452 deaths and case fatality rate (CFR) of 4.7% (as of 6 August 2020) (Sub Directorate of Emerging Infectious Diseases, 2020). That number continued to grow until it reached 1.6 million cases and 44,172 deaths (as of 23 April 2021) (Sub Directorate of Emerging Infectious Diseases, 2021a). The COVID-19 pandemic has impacted almost all sectors, not only the health sector. In the economic sector, restrictions on community activities affect business activities, but now its impact is also felt by the education sector. Several countries, such as China, Hongkong, Singapore, Japan, and other countries including Indonesia, have taken a policy of canceling all educational activities so that the government and related agencies must provide alternative educational processes for students who cannot participate in schools (Susilawati *et al*, 2020; Viner *et al*, 2020; Abidah *et al*, 2020). Moreover, the data on the number of cases of COVID-19 in the child-age population in Indonesia as of 30 April 2021 was still quite high at around 12.3%, of which 9.5% were in school-age children (6-18 years old). This number has even increased by 30% from the number of cases in August 2020 (Sub Directorate of Emerging Infectious Diseases, 2021b). The United Nations Educational, Scientific and Cultural Organization (UNESCO) reports that the pandemic has disrupted the education system globally, affecting the lives of more than 1.5 billion students and their families (UNESCO/UNICEF/ World Bank, 2020).

The COVID-19 pandemic that has hit the world has prompted countries in the world to take policies related to school hours that vary between countries. At the beginning of the pandemic, the Indonesian Minister of Education and Culture issued a policy for school learning in Indonesia to be conducted with an online system on April 2020 (Ministry of Education and Culture Republic of Indonesia, 2020). The policy is not only intended to protect children from COVID-19 but also helps prevent the transmission of COVID-19 among children, their families, and communities (Kelvin and Halperin, 2020).

The Indonesian government always reviews school learning policies during the pandemic following the context of the development of the pandemic and learning needs. The government then issued a Joint Ministerial Decree of Four Ministers (Minister of Education and Culture, Minister of Religious Affairs, Minister of Health, and Minister of Home Affairs) to determine that the implementation of school learning could be conducted face-to-face starting in July 2020 and was conducted gradually starting from senior high school level, junior high school level, elementary school level, and kindergarten/preschool level. However, the policy was adjusted to the COVID-19 zones, where only schools located in the green and yellow zones can conduct face-to-face learning (Ministers of Education and Culture, Religious Affairs, Health, and Home Affairs, 2020).

The Indonesian government has determined that the schools reopening must obtain the approval of the local government and parents. In determining the policy for opening schools, the local government asks for recommendations from the health sector, and community health center (Government Community Health Center) acts as the foremost health institution to provide assessments and recommendations on the decision to open schools in their working area. Community health center, in the Indonesian context, is a health service facility that has a dual role and function, namely, organizing public health efforts and individual health efforts at the first level in its working area (MOH RI, 2014). Public health efforts are any activities to maintain and improve health as well as prevent and overcome the emergence of health problems at the family, group, and

community levels including school level, while individual health efforts are activities and/or a series of health service activities aimed at improving, preventing, curing disease, reducing suffering from disease, and restoring individual health (MOH RI, 2014). One of the roles of community health center in doing the function of public health effort is to supervise the implementation of a health program in educational institutions (School Health Initiative (UKS) Program) in their area. Community health center has a strategic position in preventing and controlling the transmission of COVID-19 in schools during the pandemic and during the implementation of the policy of reopening schools. Ministry of Health has a role in schools reopening policy so it requires an evidence-based information related to the readiness of community health center. A study evaluating the readiness of community health center in monitoring and supervising health protocols in schools has been conducted to support efforts to control and prevent the transmission of COVID-19 in educational institutions.

## MATERIALS AND METHODS

### Study design and settings

The study was conducted with a cross-sectional design through an online survey using Google Forms from 13 October 2020, to 9 November 2020, in 34 provinces in Indonesia. The population in this study was all community health center in Indonesia that have been registered at the Data and Information Center of the Ministry of Health as of 31 December 2019. The sample size was calculated using the Slovin formula (Tejada and Punzalan, 2012) with the population being determined at 10,134 community health centers and a margin of error of 5% so that a minimum sample size of 385 community health center was obtained. Assuming that online-conducted self-administered survey will get a low response rate, the sample size was increased by 50% so that sample size was 577. The sample selection was done by systematic random sampling to obtain representative samples in 34 provinces.

## Data collection

The questionnaires used were online questionnaires that were prepared using Google Forms and have been tested first at 3 community health centers. The questionnaire was filled out independently (self-administered questionnaire) by the head of community health center or program manager. Before collecting data, the research team conducted online dissemination of the study's plan to the Head of the Provincial Health Office, the Head of the District Health Office, and the Head of the selected community health center. The link for filling out the questionnaire administered via Google Forms was sent by WhatsApp, followed by an official letter to the person in charge of the family health program at the district/city health office. Researchers conducted follow-up actions via telephone and WhatsApp on the selected samples to ensure the number of samples was met.

## Variables

The readiness of community health center to support the reopening of schools was assessed using an index composed of 18 indicators and was divided into 3 sub-indicators, namely, readiness of human resources, readiness of facilities, and readiness on monitoring and supervising health protocol in school. The determination of indicators is based on the guidebook for monitoring and supervision of health protocols in schools and based on discussions of experts (MOH RI, 2020a). Each indicator has a value of 1 if the answer is 'yes' and 0 if the answer is 'no'. Each indicator has a different weight according to the agreement of the team and experts with the following provisions: a weight of 1 if the indicator is considered very unimportant, 2 if the indicator is considered unimportant, a weight of 3 if the indicator is considered somewhat important, a weight of 4 if the indicator is considered important, and a weight of 5 if the indicator is considered very important. Indicators of the readiness of community health center can be seen in Table 1.

Each value of each indicator was multiplied by the weight so that the indicator score was obtained. The readiness index was obtained by

Table 1
Indicators of the readiness of community health center

| | Indicator | Weight |
|---|---|---|
| Readiness of human resources | | |
| 1. | Availability of task force team | 5 |
| 2. | Adequacy of the task force team | 4 |
| 3. | The task force team received workshop on capacity building | 4 |
| Readiness of facilities | | |
| 4. | Availability of IEC tools and media | 3 |
| 5. | Availability of communication tools | 4 |
| 6. | Adequacy of PPE | 5 |
| 7. | Availability of hand washing equipment for patients | 5 |
| 8. | Availability of hand washing equipment for officers | 5 |
| 9. | Availability of COVID-19 recording and reporting forms | 4 |
| 10. | Availability of checklists for implementing health protocols in schools | 4 |
| 11. | Availability of ambulance/transportation equipment | 4 |
| 12. | Availability of budget related to monitoring and supervision of health protocols in schools | 4 |
| Readiness on monitoring and supervising health protocol in school | | |
| 13. | Availability of SOPs for response to COVID-19 | 5 |
| 14. | Coordination of preparation for reopening school | 4 |
| 15. | Availability of call center of community health center | 4 |
| 16. | Availability of school data in working area of community health center | 4 |
| 17. | Number of schools that have been opened | 4 |
| 18. | Community health center in collaboration with schools conduct health promotion | 4 |

COVID-19: Corona Virus Disease 2019; IEC: Information Education Communication; PPE: Personal Protection Equipment; SOP: standard operating procedure

dividing the total indicator score by the maximum score of all indicators. The determination of readiness and unreadiness was done by using the cut-off value obtained from the calculation of the Receiver Operating Characteristic (ROC) analysis and also by considering the evaluation of sensitivity and specificity and the value was 0.8882. Community health center that has an index value of more than or equal to 0.8882 is considered ready and if it has a value of less than 0.8882 is considered not ready.

## Data analysis

Data from Google Forms were exported to Microsoft Excel 2013 (Microsoft Corporation, Redmond, WA) then the data were cleaned. Data analysis was conducted using Statistical Package for the Social Science (SPSS) version 20 (IBM Corporation, New York, NY). To assess the readiness of community health center by region, analysis of variances (ANOVA) test and Post Hoc test were conducted.

## Ethical approval and consent to participate

The participants of this study were the Heads of Community Health Center or program managers who filled out the online questionnaire. Every participant gave online informed consent before filling out the study questionnaire. The study was approved by the Ethical Committee of the National Institute of Health Research and Development with reference number LB.02.01/2/KE.564/2020.

# RESULTS

This study was conducted in 34 provinces with a total of 512 community health center as samples so a response rate of 88.7% was obtained and the data could represent the national level. Most of the samples are in urban and rural areas (72.7%), about 22.2% of community health center are in remote

areas and 5.1% are in very remote areas (Table 2). Remote areas are areas that are difficult to reach because of various reasons, such as geographical conditions (islands, mountains, lands, forests, and swamps), transportation, and social and economic conditions, while very remote areas are areas that are very difficult to reach due to various reasons such as geographical conditions (islands, mountains, land, forests, and swamps), transportation, social and economic conditions (Republic of Indonesia, 2013).

At the time of the research, the Government provided COVID-19 risk map which is divided into 4 categories, namely the red zone (high-risk area: the spread is getting out of control and the outbreak has created new clusters), the orange zone (moderate risk area: the risk of spreading the virus is quite high and has the potential to get out of control), the yellow zone (low-risk

Table 2
Characteristics of community health center

| Characteristic | Frequency *n* (%) |
|---|---|
| Region | |
| Urban and rural easily accessible area | 372 (72.7) |
| Remote area | 114 (22.2) |
| Very remote area | 26 (5.1) |
| COVID-19 zone | |
| Green | 143 (27.9) |
| Yellow | 116 (22.6) |
| Orange | 123 (24.0) |
| Red | 130 (25.5) |

Note: Classification of region is based on the regulation of Republic of Indonesia (2013) while that of COVID-19 zone follows National Disaster Management Authority (2020).
COVID-19: Corona Virus Disease 2019

area: the spread of COVID-19 can be controlled, but there is still a risk that it might occur), and the green zone (very low-risk area: a risk of spreading the virus is found, but no positive cases have occurred) (National Disaster Management Authority, 2020). The COVID-19 risk zones will continue to change dynamically following the number of COVID-19 cases in the region. Determination of the COVID-19 zones in this study was based on the status during the data collection. Table 2 shows that the study sample spread evenly across the four COVID-19 risk zones. The readiness of the community health center was assessed through 18 indicators as described earlier.

Several indicators need to be considered because their coverage was still low. Only 52.5% of community health center task force teams received capacity building; only 42.8% of community health center had a checklist form for implementing health protocols in schools; 63.5% of community health center had standard operating procedure (SOPs) for response to COVID-19; and 53.1% of community health center coordinated the preparation for reopening schools (Table 3).

Overall, only 37.7% of community health center were ready when schools reopened. There was a difference in the level of readiness of community health center based on location. Community health center in urban/rural areas had higher readiness (41.1%) compared to community health center in remote areas (30.2%) ($p$=0.030) and very remote areas (23.1%) ($p$=0.082) (Table 4). COVID-19 zone was not related to the level of readiness of community health center in response to school reopening.

There are 7 regions in Indonesia, namely Sumatera, Java-Bali, Kalimantan, Sulawesi, Nusa Tenggara, Maluku, and Papua. The index value varied among the regions. Table 5 shows that community health center in Java-Bali had the highest average index value (0.86) followed by community health center in Sumatera (0.84) while community health center in Papua had the lowest average index value (0.71).

A post hoc test was conducted to see significant differences between regions. The result shows that there were differences in the readiness index

Table 3
Description of readiness indicators

| | Indicators | Frequency *n* (%) |
|---|---|---|
| Readiness of human resources | | |
| 1. | Availability of task force team | 499 (97.5) |
| 2. | Adequacy of the task force team | 391 (76.4) |
| 3. | The task force team received capacity building | 269 (52.5) |
| Readiness of facilities | | |
| 4. | Availability of IEC tools and media | 465 (90.8) |
| 5. | Availability of communication tools | 468 (91.4) |
| 6. | Adequacy of PPE | 510 (99.6) |
| 7. | Availability of hand washing equipment for patients | 509 (99.4) |
| 8. | Availability of hand washing equipment for officers | 506 (98.8) |
| 9. | Availability of COVID-19 recording and reporting forms | 500 (97.7) |
| 10. | Availability of checklists for implementing health protocols in schools | 219 (42.8) |
| 11. | Availability of ambulance/transportation equipment | 475 (92.8) |
| 12. | Availability of budget related to monitoring and supervision of health protocols in schools | 381 (74.4) |
| Readiness on monitoring and supervising health protocol in school | | |
| 13. | Availability of SOPs for response to COVID-19 | 325 (63.5) |
| 14. | Coordination of preparation for reopening school | 272 (53.1) |
| 15. | Availability of call center of community health center | 391 (76.4) |
| 16. | Availability of school data in working area of community health center | 484 (94.5) |
| 17. | Number of schools that have been opened | 488 (95.3) |
| 18. | Community health center in collaboration with schools conduct health promotion | 445 (86.9) |

COVID-19: Corona Virus Disease 2019; IEC: Information Education Communication; PPE: Personal Protection Equipment; SOP: standard operating procedure

Table 4
Readiness of community health center for school reopening

| Characteristic | Ready *n* (%) | Not ready *n* (%) | *p*-value |
|---|---|---|---|
| All community health center | 193 (37.7) | 319 (62.3) | - |
| Location | | | |
| Urban and rural (easily accessible area) | 152 (41.1) | 218 (58.9) | (Reference) |
| Remote area | 35 (30.2) | 81 (69.8) | 0.030 |
| Very remote area | 6 (23.1) | 20 (76.9) | 0.082 |
| COVID-19 zone | | | |
| Green | 51 (35.2) | 94 (64.8) | (Reference) |
| Yellow | 46 (40.0) | 69 (60.0) | 0.999 |
| Orange | 55 (45.1) | 67 (54.9) | 0.560 |
| Red | 41 (31.5) | 89 (68.5) | 0.130 |

Note: Classification of region is based on the regulation of Republic of Indonesia (2013) while that of COVID-19 zone follows National Disaster Management Authority (2020).
COVID-19: Corona Virus Disease 2019

between Sumatera and Sulawesi regions, between Sumatera and Papua regions, between Java-Bali and Kalimantan, between Java-Bali and Sulawesi, between Java-Bali and Papua, and between Maluku, and Papua (Table 6).

## DISCUSSION

The results of the study reported that in general, 37.7 percent of community health center were in the 'ready' category. This achievement was still very low and able to support the safe opening of schools, therefore,

Table 5
Readiness of community health center by region

| Region | Number of community health center | Readiness score | | | | *p*-value |
|---|---|---|---|---|---|---|
| | | Mean | Standard Deviation (SD) | Minimum | Maximum | |
| Sumatera | 143 | 0.84 | 0.12 | 0.51 | 1.00 | 0.001 |
| Java-Bali | 193 | 0.86 | 0.11 | 0.55 | 1.00 | |
| Kalimantan | 51 | 0.79 | 0.11 | 0.57 | 1.00 | |
| Sulawesi | 69 | 0.78 | 0.11 | 0.53 | 1.00 | |
| Nusa Tenggara | 22 | 0.79 | 0.12 | 0.62 | 1.00 | |
| Maluku | 14 | 0.84 | 0.10 | 0.68 | 1.00 | |
| Papua | 20 | 0.71 | 0.19 | 0.17 | 1.00 | |
| Total | 512 | 0.83 | 0.120 | 0.17 | 1.00 | |

Note: Classification of region is based on the regulation of Republic of Indonesia (2013) while that of COVID-19 zone follows National Disaster Management Authority (2020).
COVID-19: Corona Virus Disease 2019

Table 6
Post hoc test of community health center readiness index by region

| Post hoc test | Mean difference* | *p*-value |
|---|---|---|
| Sumatera *versus* Java-Bali | -0.01538 | 1.000 |
| Sumatera *versus* Kalimantan | 0.04994 | 0.191 |
| Sumatera *versus* Sulawesi | 0.05942 | 0.012 |
| Sumatera *versus* Nusa Tenggara | 0.05185 | 1.000 |
| Sumatera *versus* Maluku | 0.00691 | 1.000 |
| Sumatera *versus* Papua | 0.13708 | <0.001 |
| Java Bali *versus* Kalimantan | 0.06532 | 0.009 |
| Java Bali *versus* Sulawesi | 0.07480 | <0.001 |
| Java Bali *versus* Nusa Tenggara | 0.06723 | 0.230 |
| Java Bali *versus* Maluku | 0.02229 | 1.000 |
| Java Bali *versus* Papua | 0.15246 | <0.001 |
| Kalimantan *versus* Sulawesi | 0.00948 | 1.000 |
| Kalimantan *versus* Nusa Tenggara | 0.00191 | 1.000 |
| Kalimantan *versus* Maluku | -0.04303 | 1.000 |
| Kalimantan *versus* Papua | 0.08714 | 0.104 |
| Sulawesi *versus* Nusa Tenggara | -0.00757 | 1.000 |
| Sulawesi *versus* Maluku | -0.05251 | 1.000 |
| Sulawesi vs Papua | 0.07766 | 0.193 |
| Nusa Tenggara *versus* Maluku | -0.04494 | 1.000 |
| Nusa Tenggara *versus* Papua | 0.08523 | 0.393 |
| Maluku *versus* Papua | 0.13017 | 0.031 |

*Mean difference is significant when $p<0.05$.

several things must be reviewed. In terms of readiness of resources, as many as 97.5% of community health center had a task force team, but only 77% of community health center had adequate task force team, and only 52.5% had received briefing (Table 3). The results of research on health workers' preparedness in managing the pandemic in Indonesia showed that the ratio of medical personnel involved in the management of the COVID-19 pandemic was 0.4 for doctors and 2.1 for nurses (Firmansyah *et al*, 2020). It means that each doctor has to treat 2,500 people, while nurses obtained a ratio of 2.1 and it means that each nurse has to treat as many as 476 people. This condition is very different from the conditions in the United States and several other European countries (Spain, Italy, Germany, France, and the United Kingdom), which have high COVID-19 cases but ratio of health workers of above 2.5 for doctors and 5.5 for nurses (Firmansyah *et al*, 2020). In short, the ratio between the number of health workers and the number of people infected in Indonesia is still not ideal compared to the ratio in some developed countries with a higher number of cases (Firmansyah *et al*, 2020). Even though 9 out of 10 community health centers have a task force team, the workload of community health center personnel with various routine programs is one of the challenges in their duty of assisting schools, as was discovered in the results of research in Yogyakarta and East Nusa Tenggara (Mading and Willa, 2020; Ardiyanti *et al*, 2017)

The results also showed that half of community health center task force teams had not received any briefing. It is important to increase the capacity of community health center human resources regarding materials related to school development and supervision. The materials that need to be mastered by community health center personnel in doing the activities of fostering and supervising health protocols in the education unit are: 1) the contents of the 4 Ministerial Decree concerning guidelines for the implementation of learning in the academic year during the COVID-19 pandemic; 2) the application of health protocols in the prevention and control of COVID-19; 3) the methods of implementation and evaluation of supervision and development; 4) the ability to use and follow up the checklist following the attachment of the

joint decree of four ministers (MOH RI, 2020a).

As viewed from the readiness of facilities such as the adequacy of personal protective equipment (PPE), the availability of hand washing equipment and the availability of recording and reporting forms was quite good, but there was one important indicator that was still lacking, namely the availability of checklists for implementing health protocols in schools. The results of this study showed that only 42.8% of community health center had a checklist for health protocols at schools. The method of monitoring and supervising health protocols at schools can be done in several ways: interviews, studying secondary data, direct observation, and analysis of interview results and secondary data. With the many tasks and burdens of community health center as well as the large number of assisted education institutions that must be supervised, not all community health center can come to make direct observations of the implementation of health protocols at schools. Therefore, community health center can provide monitoring and supervision by studying secondary data using a checklist instrument and developing follow-up plans (MOH RI, 2020a).

Indonesia is the largest archipelago in the world with an estimated total of 17,504 islands. The country is ranked fourth globally in terms of population, with a population of more than 275 million with most people living in seven main regions (Java, Sumatera, Bali and Nusa Tenggara, Kalimantan, Sulawesi, Maluku, and Papua) (Mahendradhata *et al*, 2017), which are then divided into 2 major regions, namely, Eastern Indonesia (Sulawesi, Nusa Tenggara, Maluku, and Papua) and Western Indonesia (Java-Bali, Sumatera, and Kalimantan). The results of this study indicate that there are differences in the regional readiness index between Sumatera and Sulawesi regions, between Sumatera and Papua regions, between Java-Bali and Kalimantan, between Java-Bali and Sulawesi, between Java-Bali and Papua, and between Maluku and Papua. In short, it can be concluded that there is a difference in the readiness index between Western Indonesia and Eastern Indonesia. In Indonesia, inequality in the availability of health facilities and health workers and diverse geographical conditions give rise

to the potential for widening health inequalities between community groups. In the eastern region, the number of health facilities and human resources is limited so as a result people in the region do not have many options for treatment. Meanwhile, in the western region with an adequate number of facilities and human resources, the community can take advantage of more and more unlimited services (Misnaniarti *et al*, 2017; Suharmiati *et al*, 2013). Based on 2019 Health Facilities Research data (National Institute of Health Research and Development, 2019), there was a disparity in the ratio of the number of doctors to the number of community health center in Western Indonesia and Eastern Indonesia. The ratio of doctors to community health center nationally was 2.17 it means that there were 2 doctors in each health center, while in Eastern Indonesia, the ratio was lower, for example, 1.14 in East Nusa Tenggara, 0.9 in Papua, and 0.99 in Maluku while in the western region such as 2.25 in DKI Jakarta and 3.34 in Bali (National Institute of Health Research and Development, 2019). This unequal distribution of human resources also affects the differences in the readiness of community health center in Western Indonesia and Eastern Indonesia.

The readiness of community health center to provide monitoring and supervision of health protocols may also be influenced by geographical conditions. Geographical conditions have proven to contribute significantly to the disparity between regions. The geographical condition of the eastern part of Indonesia, which comprises islands, makes some small and remote islands very difficult to reach. People in eastern regions such as Papua and Maluku on average have to travel more than 30 kilometers and take more than an hour to reach health facilities. This is also influenced by the availability of regular transportation to these remote islands (Laksono *et al*, 2019). This can have implications for the budget in conducting monitoring and supervision. The budget for monitoring and supervision in Eastern Indonesia will be greater than in Western Indonesia. Moreover, this result shows that there are still around 25.6% of community health center that do not have sufficient budget to do activities related to COVID-19 school health protocol coaching and monitoring.

The strength of this study is that the index obtained can be used further to measure the readiness of community health center for reopening schools at the district/city level, which was not carried out in this study. Some limitations were unavoidable because data collection was done online and respondents filled out the questionnaire by themselves (self-administered questionnaire) so there might be differences in perceptions between researchers and respondents that affect the validity of the data. Researchers tried to minimize this limitation by giving dissemination about this study including how to answer each question. This study was conducted when COVID-19 cases were still high in Indonesia, so this study is urgently needed as evidence based to support school reopening policies. Although currently COVID-19 cases have decreased and tend to be more controlled, the method of this study still relevant to use especially if there is a spike in cases occurs, for example due to a new variant, and can still be applied in districts/cities with high COVID-19 cases. School closures as a strategy to prevent the spread of disease not only occurred during the COVID-19 pandemic but also during previous pandemics such as the experience of Hong Kong in 2008 which closed schools to prevent influenza transmission (Cauchemez *et al*, 2009), as well as the H1N1 pandemic influenza where many countries in the world had closed schools (Araz *et al*, 2012; Potter *et al*, 2012). Therefore, this study can be used as a lesson learned to deal with the possibility of a pandemic in the future that may affect school children such as the case of H1N1, influenza and reemerging diseases.

In summary, we can conclude that 1) the opening of schools must be implemented carefully by considering the conditions of each district/city; 2) there is a significant difference in the level of readiness between regions especially between Sumatera and Sulawesi regions, between Sumatera and Papua regions, between Java-Bali and Kalimantan, between Java-Bali and Sulawesi, between Java-Bali and Papua, and between Maluku and Papua; 3) there are several indicators that still need to be improved, including: availability of task force teams who received workshop on capacity building, availability of a checklist forms for implementing health protocols at schools,

availability of SOPs for response to COVID-19, and coordination between community health center and schools.

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## CONFLICT OF INTEREST DISCLOSURE

The authors have no conflict of interest to declare.

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