

# School reopening: Evidence-based recommendations during COVID-19 pandemic in Indonesia

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**ABSTRACT** Since the first Coronavirus Disease 2019 (COVID-19) case was reported, it has run amok and caused global changes. It has affected human lives in almost every aspect, including education. In response to COVID-19, governments and policy-makers decided to shift the educational activities into online learning and institute school closure. As of March 2020, many countries worldwide have implemented school closure, including Indonesia. Large scale social distancing and stay-at-home policies have begun to negatively impact society's physical and mental health. As people start to adapt to the first wave of the COVID-19 pandemic, policy-makers and the government need to consider how to reopen the schools and its system to keep students and staff safe. School reopening is an important step toward loosening the lockdown. Schools play a crucial role in preserving children's well-being. The objective of this review was to give a recommendation to facilitate school reopening. Research articles were gathered and assessed based on the themes of the articles. Forty articles were found reflecting SARS-CoV-2 and school reopening. Findings were adapted and modified according to Indonesian situations during the SARS-CoV-2 pandemic. Indonesia is currently preparing the first steps toward school reopening. For schools to be reopened, there are several health measurements that need to be considered. A good collaboration between various authorities and stakeholders is essential in school reopening so that children's safety and disease mitigation strategies remain stable. This review presents insights and recommendations for every element involved in school safety including the government, schools, teachers, parents and students including what each needs to do to prepare in advance for the up-coming decision to reopen schools.

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## 1. Introduction

The newly identified strain of Coronavirus, Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) has made its severe health impact worldwide.<sup>1</sup> Coronavirus Disease 2019 (COVID-19) is transmitted via respiratory droplets and by direct contact with infected persons or by contact with contaminated objects and surfaces.<sup>2</sup> Wildly contagious, various systemic manifestations, and fast clinical deterioration are several challenges faced in handling patients with COVID-19. Due to

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the widespread transmission of COVID-19 found in almost every province in Indonesia, the Indonesian government decided to temporarily close all schools according to the transmission patterns in every region. The policy is not only intended to protect children from COVID-19, but it also helps to prevent SARS-CoV-2 transmission among children, their families and community.<sup>3</sup> However, the school closure policy imposes several risks which need to be considered. Prolonged school closure can affect children's development and psychological well-being as well as cause several unwanted economic effects.<sup>4</sup>

To date, after three months of school closure, in regard to educational and economic aspects, the Ministry of Education and Culture of Indonesia

decided to take a measured step toward reopening schools in early July 2020. The new policy was commendable for addressing each regional government, school administration, and parents' preparedness to reopen the schools. However, the picture of the policy is too general. It lacks a deep understanding and appears to disregard the present prediction of possible in-the-field problems. Several aspects, including the increasing number of new COVID-19 cases, uneven dynamics of additional new cases throughout most regions in Indonesia, and suboptimal tracing, reporting, and mitigating of COVID-19 cases, are important to be considered. Accordingly, our review provides and offers further evaluation and consideration of additional education system measures, risks, and impacts which are needed in preventing and lowering the transmission risks of COVID-19, once schools are in the process of reopening. All findings are summarized in several easy-to-use checklists. Hence, the government is expected to weigh the risks and benefits of every policy which will be made or planned, respectively.

## 2. Method

### 2.1 Search Strategy

A literature review was performed to assess the recommendation of school reopening during the "New Normal" era. Electronic search from databases such as PubMed, Embase, Science Direct, and Google Scholar was completed and articles were assessed and selected from the search. The following are the search criteria: 'school reopen' or 'school reopening' or 'school closure' or 'school' or 'children' or 'child' AND 'COVID-19' or 'pandemic' or 'quarantine' or 'psychology' or 'mental health' or 'development' or 'recommendation'. Forty papers were selected to be reviewed. Articles gathered are ranging from 1994-2020, with seven papers ranging from 1994-2019, and thirty-four papers are recent studies from 2020. The literature was reviewed by the authors, resulting in the selection of those appearing in this paper.

Among the reviewed articles, risk assessment protocols and recommendations were extrapolated and modified in accordance with situations in Indonesia. Thus, this comprehensive approach can give an update for the newly adapted strategies for

school reopening in Indonesia.

## 3. Result

Although school closure policy has been addressed as one of the disease mitigation strategies, new obstacles have emerged. Evidences and recommendations have reported negative effects regarding children's development, education, and psychology. Prolonged school closure brought tremendous impact to parent's economic status. On the other hand, reopening school policy without judicious judgement might eventually lead to other more harmful effects. Evidences and recommendations are reported as follows.

### 3.1 The negative effects of school closure

#### 3.1.1. The negative effects on children's development and education

From the children's developmental point of view, it is undeniable that schools are considered to be one of the most systematic and scientific institutions to stimulate and facilitate their development. Education at school is one of the fundamental needs of children especially in fulfilling their right to education<sup>5</sup>. The core educational values consist of improving children's academic and life skills ranging from basic physical, social, and character building through developmentally appropriate psychological, intellectual, and spiritual aspects. During this modern era, the family remains the mainstay in children's character development, which will continue in formal education at school to improve cognitive and behavioral aspects.<sup>6</sup> Aside from a place to study, school is also a place for children to make friends with others of the same age. Indeed, children may still be able to study at home but a gap exists.<sup>7</sup> Meanwhile, social interaction during studying, direct contact type of playing and communication with other children of the same age are still necessary in social skill improvement and remain important for the optimal development in children.<sup>5,8</sup> Therefore, school closure during this COVID-19 pandemic could potentially disturb this fundamentally essential education in children. Prolonged use of electronic media also has detrimental effect on child development, such as obesity, sleep disturbance, preoccupation with the

online activities, decreased interest in offline or “real life” relationships, unsuccessful attempts to decrease gadget use, and withdrawal symptoms.<sup>9</sup>

### **3.1.2. The negative effects on children’s psychology**

It is in almost all children’s nature every day to enjoy outdoor activities and to play with other children of the same age. This daily interaction results in a higher probability of children contracting and transmitting the virus. Children’s lack of understanding in the importance of staying at home, school closing, and maintaining social distancing will result in children having difficulty to obey these rules. The older children might try to understand ‘what is going on’ during this dangerous time of school closure. However, younger children will have questions and doubts regarding the need for staying at home, school closing, and social distancing will eventually arise. Furthermore, this lack of understanding in younger children will result in discomfort and frustration while obeying the rules.<sup>10,11</sup> Isolation and lack of social interaction with their peers will lead to psychological stress in children and teenagers.<sup>12,13</sup> Prolonged boredom could lead to children and teenagers leaving home to play somewhere unsafe and to gather in large groups, which is known to be unfavorable in preventing transmission of COVID-19.<sup>14</sup>

### **3.1.3. The negative effects on economical aspect**

Shifting of traditional education media into online education media needs parents’ preparedness, especially in providing and using electronic devices appropriately, as well as spending extra expenses for stable Internet connection. If the government does not help to provide equal facilities in fulfilling children’s education needs, prolonged school closure could eventually lead to a wide disparity in learning opportunities and a significant gap in accessing education outcomes between wealthy and impoverished families.<sup>4,15,16</sup>

For the impoverished family, schools and playfields might be the only place for their children to play and study. This happens because their parents need to work and the residential area might not be sufficient in providing a safe and good social environment. With the recent school closure policy, children from impoverished families could suffer

more set-backs in education and developmental aspects because of insufficient social environment and lack of parental support.<sup>17,18</sup>

The COVID-19 pandemic also results in a global economic recession which in turn disrupts a family’s income. This dilemma further adds to parents’ distress and might also lead to new conflicts between parents and their children. The worst scenario which needs more attention is the higher probability of child abuse<sup>17</sup>. Studies in developed countries showed that many parents need to leave their job in order to take care of their children during school closure time in a pandemic. This unemployed status will affect both the family’s income and the availability of human labor at the workplace.<sup>19–21</sup> In Indonesia, many children are nurtured not only by their parents but also by their family relatives or by paid caregivers. This cultural consideration makes it harder in determining the effects from school closure on parents’ work and economical status.

## **3.2 The negative effects of schools reopenings**

### **3.2.1 Risk of SARS-CoV-2 infection in children**

It is assumed that children are less likely to contract SARS-CoV-2 infection since the children’s age group constitute only 1-2% of total COVID-19 patients.<sup>22,23</sup> However, there is a possibility that the reported numbers in previous studies are not representative of the actual numbers of children cases. One study in China found that about 86% of patients with SARS-CoV-2 remained undiagnosed during the early stage of this global pandemic.<sup>24</sup> Most pediatric patients with SARS-CoV-2 infection presented only with mild complaints and some were even asymptomatic. Meanwhile, polymerase chain reaction (PCR) tests from nasopharyngeal swabs have been performed only in pediatric patients with moderate to severe symptoms.<sup>25</sup> This pattern could lead to an underestimation of pediatric patients infected with SARS-CoV-2.

Severe disease manifestations such as in Acute Respiratory Distress Syndrome (ARDS) and severe multiorgan dysfunction have been reported.<sup>26,27</sup> Based on a case report by the Indonesian Pediatric Association (IDAI), there were several COVID-19

pediatric cases in Indonesia that presented with severe disease manifestations and led to fatalities.<sup>28</sup> Evidence suggests that in mild symptomatic and asymptomatic pediatric patients with COVID-19, systemic inflammation resembling Kawasaki disease could be found. Some cases progressed into hyperinflammation shock and eventually resulted in fatalities.<sup>29-32</sup> The WHO is currently investigating the emergence of SARS-CoV-2 infection in children with symptoms resembling Kawasaki disease. These facts are in contrast to the current incorrect considerations for school reopening which assume that COVID-19 infection in children is always presented with mild symptoms or even may be harmless.

### 3.2.2 Risk of SARS-CoV-2 transmission in children

It has also been incorrectly proposed that pediatric patients with SARS-CoV-2 are less likely to transmit the disease since they usually present with asymptomatic to mild symptoms as well as less viral load. However, on the contrary, evidence suggests that the viral load found in children are equal compared to adults.<sup>33</sup> Furthermore, there is no difference between virus replication rate in culture medium taken from children's swab tests compared to adults' swab tests.<sup>34</sup> Therefore, children are not any less likely to transmit the disease, even though they might have milder symptoms as compared to adults.

During the previous SARS pandemic, virus transmission occurred once clinical manifestations developed and reached its peak once symptoms worsened. The mitigation strategy using thermal scanning with a thermometer was useful in containing disease transmission during the previous SARS pandemic. Unfortunately, during SARS-CoV-2 pandemic, this mitigation strategy is less effective since significant transmission could happen from asymptomatic, presymptomatic or mildly symptomatic children.<sup>35</sup> While adult patients with COVID-19 have the potential to spread the virus to 2-3 people, a recent case report study in China stated that an infected young person could transmit the disease to seven other teenagers.<sup>36</sup> The transmission could occur before any fever or other clinical manifestations were reported. Other studies also suggest that 40% of SARS-CoV-2 transmission

occurred before manifestations of any clinical symptoms.<sup>37</sup>

Transmission of COVID-19 disease occurs via droplets excreted from the positive patient's respiratory tract during talking, sneezing, or coughing. The droplets will circulate in free air for around nine minutes before slowly coming down to the surface of an object.<sup>38</sup> It will survive for 4-72 hours on the surface.<sup>39</sup> Therefore, contaminated objects and surfaces frequently touched by children at school can be a potential medium for SARS-CoV-2 transmission.

Evidence also suggests SARS-CoV-2 transmission via aerosol (droplet nuclei)<sup>40</sup>. Aerosol is relatively smaller compared to droplets and is generated during medical procedures, such as, nebulization, intubation, and dental procedures.<sup>39</sup> It has been proposed that droplet nuclei are also produced during coughing and speaking. Coughing produces more concentrated droplets than speaking.<sup>41</sup> Nevertheless, the louder a person talks, the more droplet nuclei that are excreted. They could survive for 8-14 minutes in the air of confined space.<sup>42</sup> Studies have found traces of SARS-CoV-2 RNA derived from droplet nuclei which circulated in the free air of confined spaces.<sup>43,44</sup> This evidence indicates that both infected teachers and students, who remain mildly symptomatic or asymptomatic, can transmit the virus via droplets and aerosols produced during talking. It also indicates that the droplet nuclei of SARS-CoV-2 can circulate for a long period of time in the atmosphere in closed classrooms lacking ventilation. Therefore, the one meter apart seating plan inside the classroom may be less useful than at first believed in preventing SARS-CoV-2 transmission.<sup>38</sup>

Studies have shown that SARS-COV-2 RNA was detected in children's feces in a longer period compared to that of nasopharyngeal swabs.<sup>45,46</sup> SARS-CoV-2 was also isolated from a fecal sample taken from an asymptomatic pediatric patient.<sup>47</sup> Isolated virus remains alive during sample collection indicating that fecal oral transmission could occur.<sup>48</sup> This route of spreading will lead to a possibility of disease transmission at schools via contaminated feces in unhygienic toilets at schools, poor hand hygiene behavior, and also unhygienic and

contaminated food at school.<sup>49</sup>

Studies evaluating COVID-19 transmission in school facilities showed inconclusive results. A study in Ireland on close contact tracing from six COVID-19 positive cases related to school opening found that there was no single confirmed case at school areas.<sup>50</sup> Meanwhile, in New South Wales, Australia, close contact tracing from 18 positive COVID-19 cases showed additional two positive confirmed cases at school areas.<sup>51</sup> These varying results are probably due to the fact that the PCR examination was performed only in children with a history of close contact with COVID-19 patients, diverse health protocols at every school and countries, and incomprehensive laboratory examination in screening students at school.

Several reports from other countries showed the occurrence of disease transmission at school areas or rapid increase of new cases after school reopening. Most schools were reopened in France in May 2020.

However, they were closed again within one week after seventy new cases were reported. It is believed that those 70 patients already had the disease before entering school.<sup>52</sup> This pattern indicates that it is highly important to ensure that teachers and students are completely free from the virus before going back to school to minimize disease transmission. A report from Israel states the need to periodically evaluate students' and teachers' disease's status after school reopening.<sup>53,54</sup> Meanwhile, in South Korea, the plan for school reopening at Buncheon was postponed after a new cluster of confirmed COVID-19 cases was found.<sup>55</sup> Collectively, school reopening policy is dynamic, depending on the numbers of new cases and disease transmission patterns in the community.

#### 4. Discussion

Considering the negative effects of school closure and reopening that are previously mentioned, accordingly, we formulated several risk assessments,

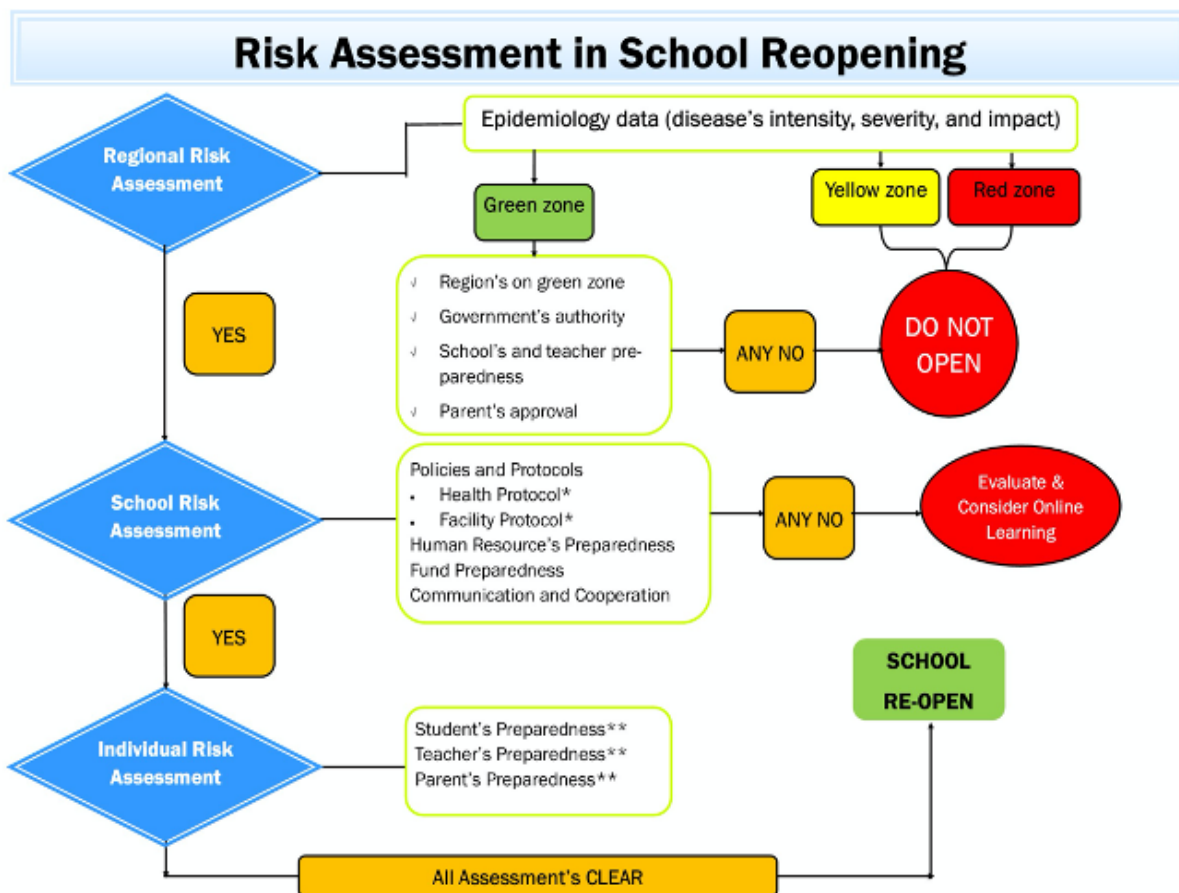


Figure 1. Risk Assessment in School Reopening

modified from several guidelines which are needed to be considered in order to ensure safety once the reopening process begins (Fig.1).

#### 4.1 Regional risk assessment

In the beginning, Indonesia has had quite low PCR test capacity even though it has steadily increased to the ratio of 2,315 tests per 1 million citizens. Due to limited resources and the narrow window of time, only the PCR cost of a small select number of people who fall under the category to be clinically monitored and patients under supervision could be covered by the Indonesian government. As a consequence, it has resulted in uneven coverage and inconsistent testing. The government policy stated that only people with severe or moderate symptoms with COVID-19 cases are to be tested with PCR. Even though it was not recommended due to its high false negative results, antibody based measurements, or rapid diagnostic tests (RDT) were provided by the government for those with mild symptoms or contact without symptoms of the disease. Hence, it is difficult to establish the precise number of currently infected cases.

Effective reproductive number ( $R_t$ ) can be used as a parameter to assess the effectiveness of mitigation measures implemented in a local region. The  $R_t$  numbers will decrease in response to strict mitigation measures.<sup>56</sup> However, when tracing and diagnostic testing are not performed thoroughly, this then leads to undetectable SARS-CoV-2 infection, and the  $R_t$  value will be less than its actual number.<sup>57</sup> Hence, procurement of PCR testing facilities and extending the criteria for subjects to do the PCR testing are the most important efforts to do by the Indonesian government as a precondition to school reopening. If combined with an intensive contact tracing, this 'umbrella approach' will help to attain the precise number of infected cases.

Determining the impact of COVID-19 is necessary for the government to accurately plan their containment measures. COVID-19 impact can be divided into 3 classifications, in which every classification has its own assessment, including disease intensity, severity and impact on the health system.<sup>58</sup>

##### 4.1.1 Disease intensity

1. Proportion of confirmed cases as compared to all cases tested for PCR. All cases that undergo PCR testing, whether symptomatic suspected cases, asymptomatic, and close contact cases are included. A low proportion indicates improved conditions.
2. Proportion of confirmed symptomatic suspect cases compared to all symptomatic suspect cases that were tested for PCR. Higher numbers represent better case identification methods.
3. Proportion of respiratory tract symptoms in suspected cases tested for PCR compared to all cases with respiratory tract symptoms. This number reflects an adequate PCR test capacity.
4. Proportion of confirmed COVID-19 cases according to age groups. After school reopening, if there is a surge of confirmed COVID-19 cases in the school age group, viral spreading in the school area is highly suspected.
5. Proportion of close contact that is traced down and quarantined, compared to all close contact cases.
6. Proportion of close contact cases tested with PCR compared to all close contact cases.

##### 4.1.2 Disease severity

1. Total death cases.
2. Total confirmed death cases.
3. Proportion of confirmed death cases of COVID-19 compared to total death cases in the period.
4. Total confirmed or suspected cases admitted to the hospital.
5. Total confirmed or suspected cases admitted to ICU/ HCU.
6. Proportion of total confirmed death cases compared to total confirmed cases of COVID-19.
7. Proportion of confirmed death cases of COVID-19 according to age groups compared to confirmed cases according to age groups.
8. Proportion of severe respiratory distress cases of confirmed cases compared to all severe

respiratory distress cases.

9. Proportion of severe respiratory distress cases in confirmed cases according to age compared to all severe respiratory distress cases according to age.

All those parameters' data could be gathered from respected health care facilities. They have to be carefully measured and used as basis of prediction by local authorities to mitigate the possible reemerging cases if and when the school does open.

#### 4.1.3 Impact on health system

1. Confirmed cases among health care workers.
2. Confirmed death cases among health care workers.
3. Sick health care workers that are on quarantine or self-isolation.
4. Proportion of beds occupied for suspected or confirmed cases in the hospital compared to allocated beds for COVID-19 cases.
5. Personal protective equipment (PPE) availability.

Mitigation on aforementioned factors of the current health system may give a hint on the capacity of certain regions to overcome the secondary outbreak during and after school reopening.

#### 4.2 School risk assessment

In addition to the regional risk assessment, several considerations at the school level should be made. School risk assessment has to be performed once the regional risk assessment has been completed. The Pennsylvania Department of Education had recommended phases of the school reopening plan according to its new safety policy post COVID-19 pandemic.

1. Red phase: closed schools remain closed if new cases are still reported in the region. Remote learning is recommended via online, both through digital and non-digital platforms. Additional student services such as a school meal programs at boarding schools should be provided as feasible.
2. Yellow phase: as the number of new cases remain stable and additional cases per day are lessened, closed schools will be reopened

based on several requirements. During this yellow phase, stay at home policies are lifted and large-scale social restrictions are loosened.

3. Green phase: outbreak parameters and the severity of outbreaks can be controlled. Most restrictions are eased, large-scale social restrictions are widely loosened although social and physical distancing measures are still applied. During the green phase, large group social activities are executed based on the 'new normal' policy. Schools within the green phase can be reopened based on several considerations.<sup>59</sup>

Several school reopening requirements should be met based on the United Nations Children's Fund (UNICEF) and the World Health Organization (WHO) recommendations. Essential requirements are protocols and policies for school reopening, health facility preparedness, human resource preparedness, funding, and communication and cooperation for school reopening. These requirements are proposed to maintain a safe and conducive learning environment while minimizing disease transmission. Based on these recommendations, several adjustments at schools are required in accordance with the New Normal policy post COVID-19 pandemic.

Summary recommendations of school reopening policies and school facilities preparedness which need to be reviewed are listed as follows (Figure 2 and 3). The higher number of "yes" answers on the checklist may indicate the readiness of the school to initiate the reopening process. On the contrary, more "no" answers may suggest that the school needs to consider other alternatives in establishing its curriculum and education process.

#### 4.3 Individual risk assessments

Human resources (students, teachers, and parents) play a pivotal role to provide a safe and conducive learning environment at schools during the New Normal Era of post COVID-19 pandemic. All parties have to share the same vision, awareness, and understanding concerning SARS-CoV-2 infection. Once actions are taken based on the same shared fundamental approach, schools are ready for reopening based on the following individual risk

SCHOOL NAME:		
SCHOOL REGION/PROVINCE:		
<b>Red zone</b>	<b>Yellow zone</b>	<b>Green zone</b>
<b>HEALTH PROTOCOL RISK ASSESSMENT</b>		
<b>QUESTIONS</b>	<b>YES</b>	<b>NO</b>
1. Can students wear masks properly?	<input type="radio"/>	<input type="radio"/>
2. Can students wash their hands or use hand sanitizer when needed?	<input type="radio"/>	<input type="radio"/>
3. Do teachers and personnel always wear masks at school?	<input type="radio"/>	<input type="radio"/>
4. Can teachers and school personnel perform and practice hand hygiene properly?	<input type="radio"/>	<input type="radio"/>
5. Can teachers and school personnel maintain safe social distance (at least 2ms apart) during school activities?	<input type="radio"/>	<input type="radio"/>
6. Does school have an emergency health protocol when there's a sick child around?	<input type="radio"/>	<input type="radio"/>

Figure 2. Health policies checklist for school reopening

SCHOOL'S NAME:		
SCHOOL REGION/PROVINCE:		
<b>Red zone</b>	<b>Yellow zone</b>	<b>Green zone</b>
<b>FACILITY PROTOCOL RISK ASSESSMENT</b>		
<b>QUESTIONS</b>	<b>YES</b>	<b>NO</b>
1. Can schools provide hand washing facilities (water and soap; hand sanitizer) at school areas?	<input type="radio"/>	<input type="radio"/>
2. Can schools provide several hand washing/disinfection stations at school areas?	<input type="radio"/>	<input type="radio"/>
3. Does school have enough space to apply desk-distancing?	<input type="radio"/>	<input type="radio"/>
4. Can school perform routine disinfection at school?	<input type="radio"/>	<input type="radio"/>
5. Does school have sufficient air ventilation both in classrooms and other school areas?	<input type="radio"/>	<input type="radio"/>
6. Does school have preventive health measures applied at the school's cafeteria?	<input type="radio"/>	<input type="radio"/>
7. Can a school provide basic health care facilities when there's a sick child around?	<input type="radio"/>	<input type="radio"/>
8. Can school provide health promotion messages about COVID 19 infection and prevention suitable for children at school's areas?	<input type="radio"/>	<input type="radio"/>

Figure 3. School facilities checklist for school reopening

assessments (Figure 4, 5, and 6).

Just as the previous checklists could be used to mitigate and assess a school's readiness before reopening, individual checklist assessments for students, parents and teachers could be used not only for preparation but also for evaluation during reopening process. Several changes on the number of "yes" and "no" answers could be expected during the

reopening process and may be used to mitigate and decide whether the reopening could be continued or halted temporarily.

**4.4 Alternative strategies and recommendations**

Indonesian schools are currently facing a paramount obstacle to conduct their education activities. Both safety and education quality have to be



STUDENT CHECKLIST		
Student's Name:	School:	
Grade:	Age:	
QUESTIONS	YES	NO
1. Do students know and understand about COVID 19 (disease and transmission)?	<input type="radio"/>	<input type="radio"/>
2. Can students implement a wear mask at school, hand washing, and social distancing?	<input type="radio"/>	<input type="radio"/>
3. Does a student have any comorbid disease (asthma, autoimmune, or chronic disease)?	<input type="radio"/>	<input type="radio"/>
4. Are student's data (identity, parents' contacts, emergency contact number) updated?	<input type="radio"/>	<input type="radio"/>
5. Can students participate in both online and offline teaching?	<input type="radio"/>	<input type="radio"/>

Figure 4. Student checklist as risk assessment in school reopening

PARENTS CHECKLIST		
Parent's Name:		
Child's Name:		
Age:		
Education:		
Occupation:		
QUESTIONS	YES	NO
1. Do parents know and understand about COVID-19 and health measures need to be implemented for their child/children?	<input type="radio"/>	<input type="radio"/>
2. Have parents implemented health preventive measures at home (wearing masks, hand hygiene, disinfection, good sanitation)?	<input type="radio"/>	<input type="radio"/>
3. Do parents have specific strategies/ are parents being cautious about their child/children doing outdoor activity, going to the supermarket, and going back to school?	<input type="radio"/>	<input type="radio"/>
4. Have parents planned a safe route and mode of transportation for their child/children to commute to school?	<input type="radio"/>	<input type="radio"/>
5. Can parents establish good communication and teamwork with teachers to support both online and offline class?	<input type="radio"/>	<input type="radio"/>
6. Can parents provide good facilities (gadget, safe and conducive environment, stable internet connection) for both offline and online classes?	<input type="radio"/>	<input type="radio"/>
7. Can parents keep close monitor on students' health measures during COVID-19?	<input type="radio"/>	<input type="radio"/>
8. Do parents have access to the nearest health care facility or pediatrician if their child is sick?	<input type="radio"/>	<input type="radio"/>

Figure 5. Parents checklist as risk assessment for school reopening

TEACHER CHECKLIST		
Teacher's Name:		
Age:		
School:		
Home room teacher for:		
Specific major taught:		
QUESTIONS	YES	NO
1. Do teachers know and understand about COVID 19 (disease and transmission)?	<input type="radio"/>	<input type="radio"/>
2. Are teachers able to innovate and compile study materials both for offline and online class (effective and adequate online class)?	<input type="radio"/>	<input type="radio"/>
3. Do teachers have sufficient gadgets and tools for online class? Can teachers use gadgets and the internet for online class?	<input type="radio"/>	<input type="radio"/>
4. Can teachers keep close monitor on students' health measures during COVID-19?	<input type="radio"/>	<input type="radio"/>
5. Can teachers establish good communication and teamwork with parents to implement both online and offline class?	<input type="radio"/>	<input type="radio"/>
6. Can teachers be a communicator between school and parents in regard to student's education during COVID 19 pandemic?	<input type="radio"/>	<input type="radio"/>
7. Can teachers keep evaluating and updating about the newest regulation on COVID 19 and its impact on education?	<input type="radio"/>	<input type="radio"/>

Figure 6. Teacher checklist as risk assessment for school reopening

guaranteed for the young students to survive in the current pandemic situation. Accordingly, various preparations and compliances to school facility preparedness for school reopening have to be performed. This approach is not only intended to protect the students, but also all staff working at schools. Implemented strategies should consider children's needs holistically, including biomedical, social and psychological perspectives.

Several preparations should be made by schools and the government to ensure that the upcoming strategies implemented for school reopening are based on considerations to fulfill children basic needs and to prevent further transmission of the pandemic. However, schools and the government are also expected to provide alternative learning strategies similar to the well-organized remote learning opportunities currently available online. Various recommendations are crucial in order to evaluate both the health benefits and side effects of online learning such as:

1. Online learning activities with gadgets should be effective, concise, and interactive, considering screen time and its limit in children. The 20-20-20 rule is recommended to prevent eye strain caused by prolonged screen time.
2. Learning modules, target, and curriculum need to be modified effectively and be timely in order to meet learning objectives in shorter online learning duration.
3. Online learning modules should be innovative and creative, consisting of opening, main body, and closing with interactive games being put in between sessions. Learning modules are made to facilitate student's autonomy.
4. Learning modules are made as a combination of online and offline learning.
5. Outcomes from online learning are evaluated based on learning objectives in accordance with the New Normal situation.

## 5. Conclusion

Schools are required to identify and mitigate disease transmission risk and to prepare school reopening regulations based on health regional authorities. Good cooperation between various authorities and stakeholders are essential in preventing further community disease transmission and in preventing the emergence of new clusters of transmission. The Indonesian Health Authorities are expected to be aware that other measurements are needed outside of the important health protocols to prevent the emergence of new cases once schools have reopened.

## Conflicts of interest

Authors declare no potential conflict of interests.

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