Elementary Schoolteachers' Behavior on the Efforts of COVID-19 Transmission Prevention During Face-to-Face Learning at School

Ella Nurlaella Hadi[1]*, Risa Laras Wati[1], Dian Ayubi[1], Dien Anshari[1]

1.Department of Health Education and Behavioral Sciences, Faculty of Public Health, Universitas Indonesia.

Abstract

East Jakarta has become a city area with the largest number of elementary schools opened during face-to-face learning, even though it has the highest population infected with COVID-19. During face-to-face learning, it is important for schoolteachers to become role models for COVID-19 transmission prevention by implementing health protocols at schools. The purpose of this study was to determine factors that affected schoolteachers' behavior in East Jakarta City, Indonesia during face-to-face learning.

This study used a quantitative approach, cross-sectional design with a sample of 239 teachers from 20 elementary schools. Data was collected by independently filling out an online questionnaire. Results showed that the average score of schoolteachers' health protocol behavior during face-to-face learning was 11.1±1.1 (range 4-12). The schoolteachers' behavior was affected by attitude (β= 0.204, P= 0.001) and health workers' support (β= 0.160, P= 0.016) after being controlled by school support and attitude towards health protocols during face-to-face learning was the dominant factor.

Accurate information from reliable sources regarding COVID-19, besides support vaccinations for school members is needed in order to maintain schoolteachers' behavior and followed by all school members.

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Introduction

Coronavirus disease (COVID-19) was first reported in 2019, at Wuhan, Hubei Province, China which later appeared in various parts of the world, including Indonesia.[1,2] On March 11th, 2020 WHO declared COVID-19 as a pandemic.[3,4] As of October 4th, 2021, DKI Jakarta became the province with the highest confirmed cases of Covid-19 in Indonesia which infected 858,347 people and East Jakarta was the most populated city area infected by COVID-19 (211,314 people).[5] Various policy efforts were developed by the government, starting with the implementation of Social Distancing, Large-scale Social Restrictions (*Pembatasan Sosial Berskala Besar/PSBB*), *Community Activity Restrictions* (*Pemberlakuan Pembatasan Kegiatan Masyarakat/PPKM*), and as of October 4th, 2021 resulting in a decrease of daily active cases in East Jakarta to 221 people.[5] Despite the decline in COVID-19 cases, East Jakarta still had the highest mortality rate in DKI Jakarta, which was 1.8%. In addition, vaccine coverage in East Jakarta was still at 74.4% or the 3rd lowest in DKI Jakarta and an orange zone area still existed.

The COVID-19 pandemic not only had an impact on the health sector but also on the economic, social and even educational sectors.[6,7] During the pandemic, schools were one of the public facilities at the educational sector that were closed.[6,8,9] Through a joint decree of four ministries, namely the ministry of Education and Culture, Religion, Home Affairs and Health, during the COVID-19 pandemic the government issued a learning guideline policy. The occurrence of a new SAR CoV2 variant made COVID-19 cases to fluctuate, therefore government policies related to education implementation underwent several changes, namely: 1) March 24th - July 2020, through the Circular Letter of the Minister of Education and Culture Number 4 of 2020 concerning the

Corresponding author:
Ella Nurlaella Hadi,
Professor. Dr, DDS, MPH
Faculty of Public Health, Universitas Indonesia
Jl. Lingkar Kampus Raya Universitas Indonesia, Depok.
E-mail: ellanh@ui.ac.id

implementation of Learning From Home or Distance Learning; 2) July 15th - August 2020, regarding the permissibility of face-to-face learning in the green zone area condition, while in the yellow, orange and red zones remained Learning From Home; 3) August 7th - December 2020, face-to-face learning in the green and yellow zone condition; 4) January - March 2021, face-to-face learning was allowed but not required, only if the local government provided a permit and the education unit met the requirements; 5) April 2021 until now, if the education unit has been vaccinated, it will be provided with the option of limited face-to-face learning following the health protocols and Distance Learning.[10]

Face-to-face learning implementation remains a risk for COVID-19 transmission. The procedures that must be carried out for COVID-19 transmission prevention are maintaining hand hygiene, wearing masks, maintaining distance and avoiding crowds, maintaining environmental cleanliness also ventilation and isolation for those with symptoms.[4,8,9,11] Therefore, all school members, whether students, teachers, or supporting staff, must continue health protocol implementation. Elementary school students in the age range of 6-13 years will find health protocols implementation difficult, especially when wearing masks, maintaining distance, and avoiding crowds when they are outside the classroom.[6] Therefore a figure who can become an example was needed and a teacher is a role model for students at school.[12] Identifying schoolteachers' behavior on COVID-19 transmission prevention is an important effort for COVID-19 control and prevention at schools. Based on this issue, a study was needed to assess schoolteachers' behavior on COVID-19 transmission prevention during face-to-face learning and factors that affected it.

Materials and methods

Research using a quantitative method approach, cross sectional design was conducted in April-June 2022 in East Jakarta City, DKI Jakarta, Indonesia. The population was 11,243 elementary school teachers in East Jakarta and a sample of 198 was calculated using the hypothesis testing of the difference of two means formula at the 95% confidence level and with 90% power of test for each independent variable.[13] To anticipate incomplete questionnaires, the number of samples was added by 20% to 240 teachers, but there were only 239 completed questionnaires. The sample selection was carried out by multistage random sampling, with the first stage randomly selecting 4 out of 10 sub-districts in East Jakarta, namely: Jatinegara, Duren Sawit, Matraman and Kramat Jati. Furthermore, from each sub-district, 5 elementary schools were selected randomly and from each elementary school a teacher was randomly selected with a proportionally calculated number. Due to the COVID-19 pandemic in Indonesia, data collection was carried out by using the method of filling out questionnaires independently by respondents which was carried out online. The questionnaire used a modified result of the Surveillance Protocol for SARS-CoV-2 infection among health workers where the questionnaire was developed by WHO[14] and has also been tested for validity and reliability. Data collection consisted of health protocols implementation behavior at schools during face-to-face learning as the dependent variable, while the independent variables included: age, gender, length of work, knowledge on COVID-19 and face-to-face learning, attitude towards implementing health protocols during face-to-face learning, availability of facilities, schools' and health workers' support. The data was analyzed using T-test, linear regression and multiple linear regression with SPSS program. Prior to data collection, this study was approved by The Ethics and Community Service Commission of the Faculty of Public Health, University of Indonesia (Certificate number: Ket - 87/UN2.F10.D11/PPM.00.02/2022). An online written informed consent was obtained from all teachers who were selected as respondents.

Results

Respondents were teachers aged 20-59 years, with an average of 39.7±10.9 years, most were female (79.1%), with the length of work ranging from 1-30 years, an average of 13.6 years±10.2. The average score for schoolteacher's health protocol implementation was 11.1±1.1 (range 4-12), knowledge 5.8±0.9 (range 3-8), attitude 21.5±3.9 (range 3-30), availability of facilities 4.9±0.4 (range 0 -5), school support 2.8±0.4 (range 0-3), health worker support 1.8±0.5 (range 0-2) (Table 1).

Variables	Mean±SD/n (%)	Minimum	Maximum
Age	39.7±10.9	20	59
Gender: Male	50 (20.9%)	-	-
Female	189 (79.1%		
Length of work	13.6±10.2	1	30
Knowledge	5.8±0.9	3	8
Attitude	21.5±3.9	3	30
Facilities	4.9±0.4	0	5
School support	2.8±0.4	0	3
Health workers' support	1.8±0.5	0	2
Health protocol behavior	11.1±1.1	4	12

Table 1. Distribution of independent and dependent variables.

This study found that in general, elementary schoolteachers in East Jakarta had implemented health protocols at schools, because almost all teachers (99.2%) had their body temperature measured when entering the school gates, cleaned their hands with hand sanitizer when entering the school, also when entering and leaving the classrooms (96.2%, 94.6% and 91.6% respectively), washed their hands with soap under running water before entering school (88.3%), classrooms (86.6%) and the teachers' rooms (87.9%), used masks during teaching in classrooms (94.6 %) and when gathering with colleagues in the teacher's room (92.1%) also keeping distance from students in classrooms (95.8%) and when gathering with colleagues in the teacher's room (91.2%) (Table 2). Schoolteachers' behavior was supported by their knowledge and attitude towards health protocols implementation during face-to-face learning which already had a good average score.

Teachers assessed the facilities for health protocol implementation at school was quite adequate due to a thermo-gun was available at the school entrance, a sink with clean running water and soap for washing hands, hand sanitizer in every classroom and teacher's room, as well as masks for school members who needed it. In addition, schools were also considered providing sufficient support because they formed a COVID-19 task force, provided training related to health protocols before the implementation of face-to-face learning and carried out daily disinfection before and after face-to-face learning.

Health workers also supported face-to-face learning implementation because they provided health protocols training and monitored face-to-face learning activities at schools.

COVID-19 Health Protocol Elements	Yes		No	
My body temperature is measured before entering the school grounds	237	99.2	2	0.8
I use hand sanitizer when I enter the school gates	230	96.2	9	3.8
I use hand sanitizer when I enter the classroom	226	94.6	13	5.4
I wash my hands with running water and soap before entering the school gates	211	88.3	28	11.7
I wash my hands with running water and soap before entering the classroom	207	86.6	32	13.4
I wash my hands before entering the teacher's room	210	87.9	29	12.1
I wear a mask during face-to-face learning in the classroom	226	94.6	13	5.4
I wear a mask when I gather with colleagues in the teacher's room	220	92.1	19	7.9
I use hand sanitizer after teaching in the classroom	219	91.6	20	8.4
I wash my hands after teaching in the classroom	229	95.8	10	4.2
I keep my distance from students during face-to-face learning in the classroom	229	95.8	10	4.2
I keep my distance when gathering with colleagues in the teacher's room	218	91.2	21	8.8

Table 2. Distribution of respondents according to health protocol elements.

Results of the bivariate analysis (Table 3) indicated that of the 8 independent variables that were considered to affect schoolteachers' behavior on health protocols implementation during face-to-face learning at schools, only 2 variables were related to the behavior of health protocols implementation, namely: attitude towards health protocols implementation during face-to-face learning (P= 0.003) and support from health workers (P= 0.037). In addition to these two variables, the variables that became candidates for inclusion in the multivariate model were: knowledge on COVID-19 and face-to-face learning (P= 0.176) and school support (P= 0.113).

Variables	B	SE	B	T	P value
Age	0.013	0.016	0.109	0.863	0.389
Length of work	-0.006	0.017	-0.045	-0.362	0.717
Knowledge	0.123	0.090	0.087	1.356	0.176
Attitude	0.067	0.022	0.191	2.999	0.003
Facilities	0.142	0.217	0.042	0.654	0.514
School support	0.323	0.203	0.105	1.589	0.113
Health workers' support	0.419	0.200	0.142	2.095	0.037
Variable	**Mean**	**SD**	**SE**	**P value**	**N**
Gender:					
Male	10.9	1.633	0.231	0.237	50
Female	11.2	1.275	0.093		189

Table 3. Factors affected health protocol behavior.

Multiple linear regression analysis showed variables that affected schoolteacher's behavior on health protocols implementation during face-to-face learning were: attitude towards health protocols implementation (P= 0.001) and health workers' support (P= 0.016), while school support was a confounder in this relationship. Analysis results also showed that attitude was the most dominant variable that affected health protocols implementation (β= 0.204, P= 0.001) (Table 4).

Variables	B	SE	B	t	P value	Tolerance	VIF
Constant	7.772	0.765		10.155	0.000		
Attitude	0.071	0.022	0.204	3.241	0.001	0.987	1.013
Health workers' support	0,471	0.194	0.160	2.428	0.016	0.898	1.114
School support	0.343	0.201	0.112	1.706	0.089	0.909	1.100

Table 4. Multivariat analysis result

Discussion

This research shows that the average score for East Jakarta elementary schoolteachers' behavior on health protocol implementation during face-to-face learning was 11.1±1.1 (range: 4-12). This value indicated that in general schoolteachers implemented health protocol elements at school. When entering the school gates almost all teachers had their body temperature measured, cleaned their hands with hand sanitizer or washed their hands with water and soap before entering the school also when entering and leaving the classrooms, used masks while teaching in classrooms and when gathering with colleagues in the teacher's room and keeping distance from students in classrooms and when gathering with colleagues in the teacher's room in accordance with the provisions set by WHO and the Ministry of Education and Culture.[11,15]

In maintaining hand hygiene, teachers prefer to use hand sanitizers rather than washing their hands with water and soap, because the proportion of teachers who washed their hands when entering classrooms (87.9% vs. 94.6%) and after teaching (90.8% vs. 95.8%) was lower than those who used hand sanitizers. The usage of hand sanitizers was easy, fast and simpler than washing hands which required running water, soap and a cloth for drying hands. Therefore, hand sanitizers are more environmentally friendly,[16] and their ability to kill germs and virus on our hands is as effective as washing hands with soap.[17,18,19]

Most teachers (94.6%) still wear masks when carrying out face-to-face learning class. This shows that the usage of masks does not interfere with the delivery of subject matters to students in the classroom. The myth that using masks can cause a decrease in oxygen saturation and carbon dioxide retention, is not supported by any data.[20] The usage of masks also aims on preventing the virus from spreading from the mouth or nose of an infected person when talking, coughing, sneezing, singing or breathing. People infected with SAR CoV2 may possibly show no symptoms but can still transmit the virus to nearby people.[21,22,23] The mask appears to be highly efficient for filtration of both small and large size pathogens, including influenza and rhinoviruses, as well as the fine particulates present in aerosol.[22,24] Therefore, in carrying out face-to-face learning at schools, a minimum distance of 1.5 meters between each student and teachers has been set in classrooms. Previous studies have shown that implementing individual distancing policies in schools, workplaces and restaurants can reduce the spread of COVID-19 by 15%.[25] Studies in Taiwan indicated that social distancing, using masks and hand hygiene was not only able to prevent COVID-19 transmission but also had an impact on reducing the incidence of other respirotary infectious diseases (influenza, and pneumonia).[26]

Results of this study found that attitude was the most influential factor of the teacher's health protocol behavior. A study in China had similar results where COVID-19 prevention behavior of schoolteachers at kindergarten, primary and secondary schools were affected by their attitude.[27] To be able to apply a lasting health protocol, not only knowledge but also a positive attitude is needed, because attitude is a behavior predictor which determines whether the knowledge will be used in behavior.[28,29] High knowledge accompanied by a positive attitude will have an impact on the implementation of the expected behavior. Moreover, results of this study found that health protocol implementation by teachers was based on their high knowledge and positive attitude towards health protocol implementation during face-to face learning, although there were also teachers who agreed that there was no need to carry out health protocols if they were already vaccinated. To change this attitude, a message from a reliable source is needed regarding the importance of health protocol implementation to prevent COVID-19 transmission, considering that many information hoaxes circulating through social media.

In addition to attitude, schoolteacher's behavior on health protocol implementation was also affected by health workers' support. The support was in the form of providing training prior to face-to face learning and monitoring its implementation. The existence of routine monitoring makes schoolteachers follow the

health protocol because they do not want the school where they teach to get a bad predicate due to the discovery of COVID-19 cases. In addition, school support is a confounding factor, which means that school support affects schoolteachers' health protocols as well as schoolteachers' attitude and support for health workers. The support provided by the school was in the form of providing facilities for health protocol implementation, disinfecting all classrooms at school every day and forming a COVID-19 Task Force. The availability of facilities to implement health protocols made it easier for teachers to implement them, because facilities are an enabling factor for behavior.[29] The COVID-19 Task Force at schools is responsible for face-to face learning implementation, monitoring health protocols carried out by all school members, handling isolation and together with health workers from the nearest health facility to track whether COVID-19 cases are found at schools.

The Indonesian government has just started the implementation of vaccination for children aged 6-11 years old in December 2021, when this study was conducted elementary school students had only received the first dose of vaccine and they still had the potential to contract and transmit COVID-19 to people around them. Due to this reason, the vaccination program needed to be strengthened, in addition to provide an example to remain compliant in health protocol implementation which can be observed from the teachers at school.

Conclusions

To prevent COVID-19 transmission while carrying out face-to face learning at elementary schools in East Jakarta city, the health protocol has been appropriately implemented and this behavior was affected by attitudes towards the health protocol during face-to face learning and health workers' support after being controlled by school support. In order for this behavior to last and become a role model for school residents, it was necessary to provide accurate information related to COVID-19 from trusted agencies, in addition strengthening vaccinations for all school members.

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Declaration of Interest

The authors report no conflict of interest.

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