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Self-efficacy, motivation and adolescent's adherence of a health protocol during pandemic COVID-19 in Indonesia

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Abstract. – **OBJECTIVE:** Compliance with the 5M health protocols of washing hands, wearing masks, keeping a distance of at least one meter, avoiding crowds, and reducing mobility is the best effort to prevent COVID-19. Adolescents are non-compliant in implementing health protocols during the pandemic. Therefore, this study aimed to investigate the level of compliance with the 5M health protocols. It also examines the relationship between self-efficacy, motivation, and compliance with health protocols.

MATERIALS AND METHODS: Data analysis was conducted on a cross-sectional survey of 978 adolescents in Surabaya, Indonesia. Multiple logistic regression was performed to analyze the relationship between the three. Furthermore, adolescent self-efficacy was measured using the General Self Efficacy Scale (GSES), while motivation scale and sociodemographic questionnaire were measured to assess the motivation and characteristics of the respondents.

RESULTS: Adolescent self-efficacy in compliance with health protocols is around (92.0%) with an average GSES score of 25.52 ± 4.64. The analysis showed that adolescents with high self-efficacy and motivation had a high level of adherence (OR 2.804, 95% CI 2.008, 3.915) and high motivation (OR 2.926, 95% CI 2.087, 4.102), compared to those with low self-efficacy and motivation.

CONCLUSIONS: The results suggested that initial identification of self-efficacy and motivation should be addressed to ensure compliance with health protocols to prevent the pandemic.

Key Words:

Self-efficacy, Motivation, Health protocol, Adolescent, COVID-19.

Introduction

Self-efficacy and motivation levels contribute to COVID-19 prevention by applying health protocols, allowing the danger of the transmis-

sion to be avoided, and are essential in reducing the number of cases. However, adolescents are a large population with a high risk of spreading the pandemic due to behavior that does not comply with the application of health protocols. This is possible because teenagers feel they have a good immune system, and most of them do not experience symptoms of COVID-19^{1,2}.

The Ministry of Health of the Republic of Indonesia recorded that on May 14, 2021, in Surabaya, there was an increase in cases. There were 3,879 cases at a young age who were positive of COVID-19. This accounted for 29.36% of the cumulative total confirmed 13,208^{3,4}. According to the World Health Organization⁴, teenagers are more vulnerable to being impacted since it marks the onset of numerous changes and adaptations, both psychologically and emotionally. The psychological condition and immunity of adolescents will be easily changed^{5,6}. Adolescence is often called a vulnerable period, where humans recognize themselves and their environment. Many of them do not understand the 5M (washing hands, wearing masks, keeping a distance of at least one meter, avoiding crowds, and reducing mobility) of health protocol, which was confirmed by the Indonesian Ministry of Health to prevent the transmission of the coronavirus⁷⁻¹⁰.

Currently, self-efficacy and motivation are needed by teenagers and have an impact on society in protection against the spread of COVID-19. In Indonesia, one type of assistance for teenagers who are preventing pandemics using the 5M health regimen is self-efficacy and inspiration from family and friends^{11,12}. Encouragement and support that can be given to unstable adolescents can be emotional, instrumental, informational, and companionship support which affects the emotional level of self-confidence in implementing

the 5M health protocol. Furthermore, convincing and motivating adolescents can make themselves more obedient to implementing the 5M health protocol^{12,13}.

The allegation of COVID-19 spread is closely related to self-efficacy, and motivation needs proof. It is essential to consider factors related to self-efficacy and motivation for adolescents against the spread of the pandemic in Indonesia, especially Surabaya. Recent studies^{12,14,15} examining these factors and their relationship to the application of health protocols are still lacking. Therefore, this study aims to assess self-efficacy and motivation and their relationship with applying 5M health protocols as a preventive against COVID-19 in Indonesia.

Materials and Methods

Study Setting and Participants

A simple random sample method was utilized to undertake a cross-sectional approach in the second metropolitan city of Surabaya, East Java Province, Indonesia, during the onset period in 2021. Data were only collected from a few sub-districts with most of the largest number of teenagers. Based on population size from January 1 to July 31, 2021, the sample size was established using the big formula of sample size determinant in health research from Lwanga et al¹⁶. A total of 978 adolescent participants were recruited to participate in the research. Undoubtedly, the anonymity of participants was ensured, and the adolescents had to meet the following requirements: (1) inclusion criteria: aged 17-20 years old, domiciled in the Surabaya, and willing to be respondents; (2) exclusion criteria: adolescents diagnosed with mental illness, deafness and illiteracy in either Indonesian or local language. Interpreters of Non-Indonesian, Chinese or regional languages are used during the data collection process.

Questionnaire

Sociodemographic information included age, gender, ethnicity, and education level. The adolescents were also asked about the surrounding environmental conditions to implement the health protocol. Four questionnaires were given to assess sociodemographic, self-efficacy, motivation, health protocol scale for preventing the pandemics. Each questionnaire used in the study was described in detail.

General Self Efficacy Scale (GSES)

Self-efficacy status was assessed using General Self-Efficacy Scale (GSES) with modification. It is an instrument of comprehensive self-efficacy measurement in various situations developed by Schwarzer and Jerusalem¹⁸. The questionnaire consisted of 10 items rated from 5-point Likert (strongly disagreed=1, disagreed=2, neutral=3, agreed=4, and strongly agreed=5). In addition, self-confidence in implementing health protocols with 5M was also measured. The minimum self-efficacy score is 10, which indicates less self-efficacy against the application of health protocols, and the best level of self-efficacy is 50. Higher or lower levels are determined based on a 40-cutoff value of the scores. The GSES scale is widely used, with Cronbach alphas ranging from 0.72 to 0.87, indicating a valid and reliable instrument^{17,18}.

Motivation Scale

The motivation of the prevention scale is an assessment scale designed to assess adolescent motivation levels in the prevention of COVID-19^{19,20}. The questionnaire consisted of 10 items rated from 4-point Likert with a value between 1 to 4. The total score is calculated by adding an individual score from ten items. The minimum score is 10, and the highest is 40, indicating a high level of motivation. The Indonesian version's validity and reliability were demonstrated by Cronbach alpha values ranging from 0.72 to 0.87, showing a valid and trustworthy instrument.

Data Collection

Data collection was conducted in Surabaya from February to August 2021 through modified questionnaires, and respondents had difficulty filling them. The goal, benefits, downsides, and principles of data confidentiality were stated to all respondents, and they were requested to grasp the information provided. Respondents are given complete freedom to approve or disapprove as respondents. However, they should sign a consent form after giving consent to participate. Participants were also told that they can resign during the study. Therefore, the questionnaire was only completed after giving their consent.

Data Analysis

Invalid or missing data were excluded, while valid data were imported into IBM Statistical

Package for Social Science (SPSS) 23 (SPSS Corp., Armonk, NY, USA). The descriptive analysis identifies frequencies for categorical mean and standard deviations for continuous variables. Simple logistic regression is used to determine the significance of variables, with a p -value < 0.05 being the threshold for inclusion in multiple logistic regressions. Multiple logistic regression was used to compute the odds ratio and 95% associated confidence intervals for predictors of self-efficacy and adolescent motivation in Surabaya city. The value of $p < 0.05$ is considered statistically significant.

Ethical Consideration

This study was approved by the Scientific Research and Ethics Committee at University in Surabaya, Indonesia, with IRB. 008071020. The first page of the questionnaire stated the study's aim, benefit, and objectives with the agreement of participation for adolescents.

Results

Characteristics of the Participants

A total of 978 respondents has been recruited, and Table I summarizes the characteristics of adolescents. Most of them are aged between 15-17 (47.3%), with an average age of 16.45 and native Javanese. Subsequently, 93.3% adhered to the implementation of health protocols.

Self-Efficacy Status

Overall, Table II shows that most adolescents (94.4%) had high self-efficacy scores, with the average GSES score being 31.37 ± 4.09 . Based on the GSES questionnaire, most participants agreed that complex problem solving would be successful when health protocols were conducted (77.3%). However, the environment would be unconcerned when there is a stumbling block in adopting it. Respondents claimed no challenges and were familiar with executing health protocols under the new circumstances.

Adolescent's Motivation in Health Protocol

Table III summarizes the results of the motivational analysis in adolescents in Surabaya. They had high motivation scores (81.7%), with the average score being 28.18 ± 2.89 . Three dominant factors that increase the level in adolescents is a sense of responsibility for self-health with a

Table I. Participant's characteristics (n = 978).

Variable	Mean (SD)	n	%
Age	16.45 (± 1.746)		
Early (10-14 years old)		183	(18.7)
Middle (15-17 years old)		463	(47.3)
Late (18-19 years old)		332	(33.9)
Gender			
Female		544	(55.6)
Male		434	(44.4)
Ethnicity			
Javanese		810	(82.8)
Non-Javanese		168	(17.2)
Educational Level			
Junior high school		113	(11.6)
Senior high school		667	(68.2)
Diploma		83	(8.49)
Bachelor		115	(11.8)
Whether the surrounding environment implements health protocols properly			
Yes		912	(93.3)
No		66	(6.7)

total of 92%. The second component is a strong desire to implement the 5M health protocol and see people around them do the same, with a 90.2%. The third most substantial reason is that implementing 5M health protocols is important to prevent COVID-19 (89%). Meanwhile, 70.6 % of adolescents disagree that they felt ashamed and overloaded when the 5M health regimen was implemented.

Characteristics of Participants and Their Association of Health Protocols

Table IV shows that adolescent characteristics are not related to implementing health protocols. Univariate analysis showed that among all characteristics, only adolescent self-efficacy and motivation had a significant association ($p < .005$) with the application of health protocols. High levels of self-efficacy have good health protocol behaviors in line with increased motivation. Meanwhile, adolescents with low self-efficacy and motivation have poor health protocol behavior.

Self-Efficacy, Motivation and Health Protocols Implementation

Table V reported that adolescents have a high level of self-efficacy and motivation at 92% and 77.3%, respectively. The comparison results with high self-efficacy with low is quite significant. They tend to implement health protocols more than others at the same motivation level.

Table II. Adolescents' self-efficacy in health protocol (n = 978).

Adolescent's Self Efficacy	GSES Score Mean + SD	Agree		Disagree	
		n	(%)	n	(%)
Difficult problem solving always succeed when implementing the 5M health protocol	3.04 ± 0.70	756	77.3	222	22.7
When someone hinders the goal of implementing the 5M Health Protocol, they will not care and look for ways to achieve it	3.12 ± 0.68	864	88.3	114	11.7
Have no difficulty carrying out intentions and objectives in implementing the 5M health protocol	3.20 ± 0.63	864	88.3	114	11.7
Always know how to behave in unexpected situations	3.17 ± 0.58	906	92.6	72	7.4
Know how to overcome it in implementing the 5M Health Protocol in new situations	3.23 ± 0.60	900	92.0	78	8.0
Have a solution to every problem in implementing the 5M Health Protocol	3.13 ± 0.65	864	88.3	114	11.7
Can encounter difficulties calmly	3.26 ± 0.58	906	92.6	72	7.4
Have a lot of ideas to solve problems	3.17 ± 0.53	906	92.6	72	7.4
In unexpected events, you can handle it well	3.17 ± 0.63	852	87.1	125	12.9
Whatever happens, 'you'll be ready to handle it	3.23 ± 0.61	882	90.2	96	9.8
Total Score	31.77 ± 4.09				

Discussion

Several studies^{21,22} on the implementation of health protocols during the COVID-19 pandemic in Indonesia were published previously. This is the first study to identify the relationship between self-efficacy and motivation factors for adolescents complying with health protocols. Therefore, this study identified the relationship between self-efficacy, motivation, and health protocol compliance in adolescents during the COVID-19 pandemic. The public often ignores this health protocol for various reasons. Logistic regression was performed to assess the relationship between

self-efficacy and motivation to implement health protocols during a pandemic. However, adolescents' self-efficacy and motivation are very diverse, with good health behavior.

This study found that most adolescents have high self-efficacy, more than half have a high level of motivation, and are not at risk of neglecting to implement the health protocol. Conversely, respondents with low self-efficacy and motivation had a higher risk of not adhering to health protocols. The perception of vulnerability in the Health Belief Model states that vulnerability refers to a person's beliefs about the possibility of getting a disease or a condition. This study strengthened

Table III. Adolescent's motivation in health protocol (n = 978).

Adolescent's motivation in Health Protocol	GSES Score Mean + SD	Agree		Disagree	
		n	(%)	n	(%)
Believing that implementing the 5M Health Protocol is essential for health and safety aspects	2.95 ± 0.75	678	69.3	300	30.7
Implementing the 5M health protocol is important to avoid the COVID-19 transmission	3.17 ± 0.64	846	86.5	132	13.5
Consistent in implementing the 5M health protocol	3.17 ± 0.58	882	90.2	96	9.8
Feel embarrassed and like a strange person if implementing the 5M health protocol	2.03 ± 0.86	288	29.4	690	70.6
Feeling pressured by others, when implementing the 5M health protocol	2.33 ± 0.70	366	37.4	612	62.6
Responsible for self-health	3.21 ± 0.59	900	92.0	78	8.0
Implementing health protocols is essential for safety and really wants to be implemented	3.18 ± 0.59	870	89.0	108	11.0
Want others to see that they can implement the 5M health protocol	3.17 ± 0.58	882	90.2	96	9.8
Peoples are happy and feel safe if they can implement the 5M health protocol	2.42 ± 0.85	462	47.2	516	52.8
Feeling guilty if you don't implement the 5M health protocol	2.51 ± 0.75	468	47.9	510	52.1
Score total	28.18 ± 2.89				

Table IV. Association between participant's background and implementing health protocol (n = 978).

Factors	Low Level (n=222)		High Level (n=756)		OR (95% CI)	p-value
	n	(%)	n	(%)		
Age						
Early (10-14 years old)	44	19.8	139	18.4	0.812 (0.644, 1.023)	0.077
Middle (15-17 years old)	91	41.0	372	49.2		
Late (18-19 years old)	87	39.2	245	32.4		
Gender						
Female	129	58.1	415	54.9	1.247 (0.905, 1.719)	0.177
Male	93	41.9	341	45.1		
Ethnicity						
Javanese	180	81.1	630	83.3	0.759 (0.506, 1.140)	0.184
Non-Javanese	42	18.9	126	16.7		
Educational Level						
Junior high school	54	24.3	59	7.8	0.829 (0.685, 1.003)	0.054
Senior high school	101	45.5	566	74.9		
Diploma	19	8.56	64	8.47		
Bachelor	48	21.6	67	8.86		
Whether the surrounding environment implements health protocols properly						
Yes	210	94.6	702	92.9	0.838 (0.426, 1.648)	0.608
No	12	5.41	54	7.14		
Self Efficacy						
Low	36	16.2	42	5.56	3.736 (2.277, 6.130)	0.000 *
High	186	83.8	714	94.4		
Motivation						
Low	84	37.8	138	18.3	2.926 (2.087, 4.102)	0.000 *
High	138	62.2	618	81.7		

* Significant value at $p < 0.05$. a Low level = score < 22. b High level = score > 22. c Simple Logistic Regression.

that the impact of self-efficacy was the strongest positively predicted the protective behaviors²³. This is also consistent with the research of Jose et al²⁴ showing that most individuals find it very easy to avoid coronavirus infection when they implement the health protocols required by the government.

The majority of respondents who have good self-efficacy and motivation and compliance with health protocols are also getting better. According to Hall et al²⁵, when the perceived benefits of a disease prevention measure are low, the probability of action or efforts to be taken for prevention

will be lower^{25,26}. On the other hand, when the perceived benefits are high, the person will carry out a health protocol, hence resulting in the high level of compliance. Action will be taken to prevent or control the disease when they believe that the benefits outweigh the perceived barriers or costs involved^{26,27}.

The perceived barriers indicate that most respondents know the obstacles encountered when implementing health protocols. Each respondent responds differently to the perceived obstacles depending on the situation and conditions experienced. Individuals with good cognition control

Table V. Logistic regression analysis (n = 978).

Variable	Health Protocol's Implementation			Adjusted OR (95% CI) ^a
	n	Mean \pm SD	p-value	
Self-efficacy Status				
Low	78	22.46 \pm 5.37	0.000	2.804 (2.008, 3.915)
High	900	25.52 \pm 4.64		
Motivation level				
Low	222	23.37 \pm 5.12	0.000	3.462 (2.130, 5.627)
High	756	25.84 \pm 4.52		

Significant value at $p, 0.05^a$ Multiple Logistic Regression.

situations and overcome these obstacles to create awareness of the situation. Awareness and belief in the problems encountered motivate the individual to seek ways to overcome them. One solution that can be conducted is looking for more accurate health promotion information and role models who implement health protocols. This aims to increase motivation in implementing the continued health protocol²⁸⁻³⁰.

According to previous research³¹, individuals' self-efficacy manifests itself in the form of self-confidence when it comes to implementing health protocols during the COVID-19 pandemic. Their self-confidence and belief may dictate how they behave, think, and react to all circumstances. Self-efficacy was found to have highly beneficial consequences in this study. This shows that most individuals already have a very high level of confidence when health protocols are applied during the pandemic^{31,32}.

Several adolescents revealed that compliance with health protocols was very vulnerable at the beginning of the pandemic due to a lack of awareness and compliance. Additionally, a lack of understanding and motivation or support from family and surroundings makes compliance vulnerable. Previous research²⁹ has stated that motivation, level of style change required, perceived severity of health problems, knowledge, the impact of change, culture, and level of satisfaction and quality of health services received can affect a person's level of adherence. This is because adolescence is a transition period that will experience hormonal and psychological changes, affecting their attitudes or behavior^{29,33}.

Despite many limitations, this research had several strengths. First, nationally representative data were used. Second, it was the first to examine the relationship between self-efficacy and motivation with compliance to implement health protocols in Indonesian.

Conclusions

The application of health protocols to prevent the transmission of COVID-19 in adolescents in Indonesia is very diverse. This study further demonstrates that adolescents may be more likely to engage in healthy behavior when they have high self-efficacy and motivation. The implementation of health protocols to prevent transmission in adolescents is very diverse. However, this study shows that the possibility of good adherence

to the implementation of health protocols can be found in adolescents with high self-efficacy and motivation. Health education programs with peer groups are urgently needed, considering that the promotion is important to provide health protocols. Furthermore, information through various verified social media is another key to overcoming the COVID-19 pandemic by constantly increasing the self-efficacy and motivation of adolescents.

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Institutional Review Board Statement

Not applicable for this study since it does not involve humans or animals.

Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

Conflict of Interests

The authors declare that they have no conflict of interest.

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PAGE 1

PAGE 2

PAGE 3

PAGE 4

PAGE 5

PAGE 6

PAGE 7