

Factors Predicting Adolescents' Compliance on Covid-19 Prevention Protocols

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Abstract

Introduction: Coronavirus disease (Covid-19) is an infectious disease that has become a global pandemic with 27 cases in Manggarai Regency. The adolescent as an age group with more asymptomatic hosts of the disease would be the super spreader of covid-19 to the other higher-risk age groups. The objective of this study is to identify the factors predicting adolescents' compliance behavior toward Covid-19 prevention protocols.

Methods: This study used quantitative descriptive method with a cross-sectional approach. This study was conducted in April-June 2020, involved 246 Junior High School and Senior High School students, selected by purposive sampling based on inclusion criteria, namely adolescents aged 13-18 years. The dependent variables in this study were knowledge, information monitoring, Covid-19 severity perception, and personal and social responsibility value. The data were analyzed using chi-square test and binary logistic regression.

Results: There was a significant relationship between gender (AOR: 1.941, CI: 0.898-4.195) and the value of personal and social responsibility (AOR: 2.330, CI: 1.041-5.214) with adolescent adherence behavior in preventing the spread of Covid-19.

Conclusion: To improve adolescent compliance behavior in preventing the spread of Covid-19, the Indonesian government and the Covid-19 task force need to consider factors such as gender and the value of personal and social responsibility in adolescents. Adolescents who have higher personal and social responsibility are more compliant in carrying out health protocols during the Covid-19 pandemic compared to adolescents who have low personal and social responsibility.

Keywords

covid-19; information monitoring; knowledge; perception; responsibility

INTRODUCTION

The World Health Organization (WHO) announced coronavirus disease 2019 (Covid-19) caused by severe acute respiratory coronavirus 2 (SARS-CoV-2) as a pandemic disease in March 2020 (WHO, 2020). Covid-

19's vast transmission causes significant issues, particularly increasing mortality. As of September 25, 2020, Covid-19 infected 31.8 million people around the world causing 3.1% deaths. In Indonesia, the number of people infected is as many as 262m022 with 3.9% case fatality rate (Kementerian Kesehatan Republik

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Indonesia, 2020) . Until recently, there are no medications/antivirus and vaccine targeted specifically to Covid-19, thus WHO suggests to stop the transmission by hygiene protocols, physical or social distancing (WHO, 2020).

Social or physical distancing creates new issues not only to adult, but also the adolescent. Children and adolescents could become the spreader of Covid-19 due to their nature of active mobility and collective activities, such as study at school, playing and travelling. A study in China on 45 children and adolescents aged 9 to 19 years old infected by Covid-19 found that the incubation period of Covid-19 in this age group is around six days and 60% are asymptomatic (Liao et al., 2020). Thus, this age group is on the higher risk to transmit the disease particularly of its asymptomatic nature. Asymptomatic adolescents tend to conduct their activities as usual and transmit the disease to others, worsened by poor self-hygiene. To prevent the transmission by children and adolescents, school closings and study from home were conducted all around the world.

In March 2020, the UN Educational Scientific and Cultural Organization (UNESCO) stated that 107 countries applied school closings, affecting the activities of 862 million children and adolescents (UNESCO, 2020). School closing during Covid-19 pandemic is estimated to reduce the transmission by 30% (Jackson, Vynnycky, & Mangtani, 2016; Viner et al., 2020). School closings are applied in Indonesia, extended to June 1, 2020, based on the announcement of Indonesian Ministry of Culture and Education. However, the school closings do not immediately make students, especially teenagers, comply with social distancing rules. The home isolation and not being able to meet their peers would cause stress and anxiety among teenagers (Steve, 2014). A study reveals that many adolescents disregard the social distancing rules because they think the disease is not dangerous enough for them to not get together with their peers (Oosterhoff & Palmer, 2020). This behavior would increase the transmission of Covid-19 infections.

Observing the issues stated in the previous paragraph, it is urged to identify the factors related to adolescents' compliance on participating in the prevention of transmission of Covid-19. On a study conducted on US

adolescents' behavior during the Covid-19 pandemic, it is found that adolescents with social responsibility, sufficient knowledge on Covid-19 and good self-worth tend to follow the prevention protocols. Meanwhile, adolescents with no interest in social conditions tend to disregard preventing Covid-19 behavior (Oosterhoff & Palmer, 2020). UNICEF surveyed 7,000 people aged 15 to 30 in Indonesia on the most effective health behavior preventing Covid-19; 39% stated handwashing while 54% of respondents stated they still go out to shop and buy medical equipment (UNICEF, 2020). The UNICEF survey reveals the general perception of Indonesian people during the pandemic, including adolescents. Further study on factors related to this non-compliant behavior is not yet conducted in Indonesia during the pandemic.

Manggarai is one of the regencies located in East Nusa Tenggara Province, Indonesia. According to the information obtained from Provincial Health Office of East Nusa Tenggara, until recently the number of people infected with Covid-19 in East Nusa Tenggara is 136, while in Manggarai it has identified 27 cases (Pemerintah Nusa Tenggara Timur, 2020). It is estimated as caused by the increasing of people from red zone areas returning to Manggarai in March to April in the holiday season, making the total of people under monitoring reach 3,045 people and increasing. Along with other regions in Indonesia, Manggarai also applied school closings, and students were suggested to study from home. In an initial interview on 10 teenagers aged 14-15 in Manggarai conducted by the researcher on the activities in pandemic, 60% stated that they still do out of house activities such as getting together with their friends. It is due to the lack of information and the perception that Covid-19 is not harmful. This initial study indicates that the majority of adolescents in Manggarai do not have enough understanding on the importance of social distancing. Thus, this study aimed to identify factors related to adolescents' compliance behavior on facilitating the prevention of Covid-19 transmission in Manggarai, so proper education could be developed to increase the compliance and reduce the transmission of Covid-19 in Manggarai.

MATERIALS AND METHODS

Study Design

This study was a quantitative study with cross-sectional design.

Population, Samples, and Sampling

Populations in this study were adolescents that currently attended junior high school and senior high school or vocational high school in Manggarai. The study samples were adolescents that currently attended junior high school and senior high school or vocational high school in Manggarai in April to June 2020 that fit into inclusion criteria as many as 246 respondents. The samples were collected using purposive sampling technique with criteria applied. Inclusion criteria of this study are adolescents that currently attend junior high school and senior high school or vocational high school in Manggarai, aged 12 to 18 years old, consented to fill out the online questionnaire using Google Forms. The exclusion criteria are adolescents with special needs and/or with mental illness.

Instruments

Instruments used in this study are two questionnaires; the first questionnaire is adolescents' compliant behavior on preventing Covid-19 transmission questionnaire including self-hygiene behavior (five items), mask use (two items), physical and social distancing behavior (six items), shopping behavior (two items) (Oosterhoff, Palmer, Wilson, & Shook, 2020). Adolescents' compliant behavior on preventing Covid-19 transmission is defined as adolescents' health behavior in order to prevent the Covid-19 infection according to official government health protocols. Adolescents' compliance is categorized into two categories, namely compliant if the score > median (47) and non-compliant if the score ≤ median. The second questionnaire is factors related to adolescents' compliance on preventing Covid-19 transmission including knowledge questionnaire (11 items), Covid-19 information monitoring (two items), adolescents' Covid-19 severity perception (six items), adolescents' personal and social

responsibility value (three items) (Li et al., 2020; Zhong et al., 2020). Covid-19 knowledge is defined as adolescents' knowledge on Covid-19, including definition, transmission method and Covid-19 prevention. Knowledge is categorized into two categories, sufficient if the score > median (9) and poor if the score ≤ median. Covid-19 information monitoring is defined as the frequency of Covid-19-related news by adolescents through mass media, including television or the internet. The Covid-19 information monitoring is divided into two categories, high if the score > median (7) and low if the score ≤ median. Adolescents' Covid-19 severity perception is defined as adolescents' views on the severity level of Covid-19. Adolescents' Covid-19 severity perception is divided into two categories, positive if the score > median (26) and negative if the score ≤ median. Adolescents' personal and social responsibility value is defined as responsibility values of the adolescent personally and socially in participating in the prevention of Covid-19 transmission. Adolescents' personal and social responsibility value is divided into two categories, high if the score > median (11) and low if the score ≤ median. The results of the reliability test and the validity of the adolescent adherence behavior questionnaire in the prevention of Covid-19 transmission showed Cronbach's alpha value of 0.646 and the results of the validity test using Pearson's correlation showed the value of $r_{count} > r_{table}$ ($r_{table} = 0.3044$) with a significance level of 95%.

Procedure

Data were collected via Google Forms. The research objectives were explained on the start page of the Google Form. Furthermore, respondents filled out a Google Form containing a questionnaire on adolescent adherence behavior in the prevention of Covid-19 transmission and the factors that influence adolescent adherence behavior. Google Form filling takes 8-10 minutes.

Data Analysis

Data were analyzed by statistic descriptive analysis using chi-square test and the multivariate analysis using binary logistic regression test. All data were analyzed using

Table 1. Demographic Data Characteristics of Adolescents (n=246)

	Variable	n	%
Age	12-15	98	39.8
	16-18	148	60.2
Gender	Male	69	28.0
	Female	177	72.0
Education	Junior High School	57	23.2
	Senior High School	189	76.8
Parents' Education	Elementary School	20	8.1
	Junior High School	17	6.9
	Senior High School	86	35.0
	Higher Education	123	50.0

SPSS 22. To ensure that there were no missing data, the researcher conducted a frequency test and any missing data were deleted.

supervision of Deputy I Educational, Research and Social Services with the Ethic Clearance No.07/SK-IIIa/WAREK I-02/k/02/20.

Ethical Clearance

This study was ethically examined by Ethical Commission of Indonesian Catholic University of St. Paul Ruteng under the

RESULTS

Table 1. Adolescents' demographic data characteristics, the majority of respondents aged 16 – 18 years old as many as 148

Table 2. Adolescents' Compliance on Preventing Covid-19 Transmission (n=246)

Variable	Last 7 Days					
	Never	Once or twice	3 or 4 times	5 or 6 times	Everyday	Several times a day
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Hand washing.	3 (1.2)	15 (6.1)	24 (9.8)	15 (6.1)	134 (54.5)	55 (22.4)
Using hand sanitizer.	37 (15.0)	50 (20.3)	42 (17.1)	21 (8.5)	67 (27.7)	29 (11.8)
To clean handphone.	59 (24.0)	70 (28.5)	39 (15.9)	12 (4.9)	56 (22.8)	10 (4.1)
To clean frequently touched object surfaces.	73 (29.7)	53 (21.5)	37 (15.0)	14 (5.7)	53 (21.5)	16 (6.5)
Going out of house.	55 (22.4)	103 (41.9)	38 (15.4)	13 (5.3)	29 (11.8)	8 (3.3)
Keep the minimum 1 meter distance with other family members in the same house	115 (46.7)	47 (19.1)	33 (13.4)	10 (4.1)	26 (10.6)	15 (6.1)
Keep the minimum 1 meter distance with others outside the house	25 (10.2)	46 (18.7)	25 (10.2)	16 (6.5)	102 (41.5)	32 (13.0)
Get together with relatives.	121 (49.2)	74 (30.1)	14 (5.7)	10 (4.1)	24 (9.8)	3 (1.2)
Get together with teachers, neighbors and friends.	110 (44.7)	99 (40.2)	19 (7.7)	6 (2.4)	9 (3.7)	3 (1.2)
Go to market or store.	100 (40.7)	98 (39.8)	25 (10.2)	10 (4.1)	11 (4.5)	2 (8)
Variable	Never	Rarely	Frequently		Always	
Using a mask when going out	5 (2.0)	35 (14.2)	37 (15.0)		169 (68.7)	

Table 3. Bivariate and Multivariate Analysis: Factors Predicting Adolescents "Compliance to Covid-19 Transmission Prevention Protocols" (n=246)

Variable	Bivariate analysis				P	Multivariate analysis			
	Compliance behavior of preventing Covid-19 transmission					AOR	P	95 % CI	
	Non-compliant		compliant					Lower	Upper
n	%	n	%						
Age									
12-15	39	39.8	59	60.2		1.000			
16-18	74	50	74	50	0.116	0.686	0.177	0.335	1.407
Education									
Junior High School	23	40.4	34	59.6		1.000			
Senior High School	90	47.6	99	52.4	0.334	0.829	0.568	0.356	1.929
Gender									
Male	41	59.4	28	40.6		1.000			
Female	72	40.7	105	59.3	0.008	1.941**	0.027	0.898	4.195
Personal and social responsibility value									
Low	41	62.1	25	37.9		1.000			
High	72	40	108	60	0.002	2.330***	0.007	1.041	5.214
Knowledge									
Poor	39	47	44	53		1.000			
Sufficient	74	45.4	89	54.6	0.813	1.009	0.976	0.480	2.118
Information monitoring									
Low	61	47.3	68	52.7		1.000			
High	52	44.4	65	55.6	0.655	1.095	0.743	0.538	2.226
Covid-19 severity perception									
Negative	49	46.7	56	53.3		1.000			
Positive	64	45.4	77	54.6	0.842	0.886	0.680	0.416	1.889

respondents (60.2%), female respondents as many as 177 respondents (72%), education level is junior high school as many as 189 respondents (76.8%), parents' education level is higher education as many as 123 respondents (50%).

Table 2. Adolescents' compliance on preventing Covid-19 transmission in the seven days reveals that the majority of adolescents wash their hands every day, as many as 134 respondents (54.5%); use hand sanitizer every day as many as 67 respondents (27.7%); clean their handphones once or twice as many as 70 respondents (28.5%); never clean the most touched object surfaces as many as 73 respondents (29.7%); going out of house once or twice as many as 103 respondents (41.9%); never maintain the minimum 1 meter distance with other family members in the same house as many as 115 respondents (46.7%); keep a minimum 1 meter distance from others outside the house every day as many as 102 respondents (41.5%); never get together with relatives as many as 121 respondents (49.2%);

never get together with teachers, neighbors or friends as many as 110 respondents (44.7%); never go to the market or store as many as 100 respondents (40.7%); always use mask when going out as many as 169 (68.7%).

The result of bivariate analysis using the chi-square test shown in Table 3 indicates a significant relationship between gender (p value 0.008) and personal and social responsibility value (p value 0.002) to the compliance toward the Covid-19 transmission prevention protocols among adolescents in Manggarai year 2020.

Table 3 shows the results of the multivariate analysis conducted using binary logistics. The binary logistic regression test shows a significant relationship between gender (AOR: 1.941, 95% CI: 0.898-4.195, p value 0.027) and personal and social responsibility value (AOR: 2.330, 95% CI: 1.041-5.214, p value 0.007) to adolescents' compliant behavior to prevent Covid-19 transmission in Manggarai, 2020. Adolescents who have a high personal and social

responsibility value 2.330 times have obedient behavior in preventing the spread of Covid-19 compared to adolescents who have low personal and social responsibility values. Adolescents with the female gender are 1.941 times more likely to comply with the prevention of the spread of Covid-19 than male.

DISCUSSIONS

Our results show that almost all adolescents do not adhere to the behavior to prevent the spread of Covid-19. These behaviors include rarely washing hands using soap and hand sanitizer, not maintaining distance when gathering with family and friends and not wearing masks. The results of this study are supported by research conducted by Oosterhoff et al. (2020) which reports that as many as 160 teenagers (20.8%) never wash their hands using a hand sanitizer; gather with friends once a week as many as 222 teenagers (28.8); and spending time with other people who are not family members once a week as many as 271 teenagers (35.2%).

Adolescents play an important role in preventing Covid-19 transmission. One of the golden rules of Covid-19 prevention measure is social distancing or physical distancing. However, it is difficult for adolescents to comply with government's protocols on social distancing because adolescence is a period of collective and peer activities. In the Covid-19 pandemic era, most adolescents fall into depression, feel pressured, hopeless and angry because they can't fulfill their peer activities (Healthy Children, 2020).

In adolescents, there are several factors that influence compliance behavior including parental authority, biological, psychosocial and environmental factors that may lead to risky behavior, in this case non-compliance behavior in preventing the spread of Covid-19 (O'Donohue, Benuto, & Tolle, 2013). Adolescents are in an egocentric development stage where they think more of themselves than others so that social restrictions and school closures during the Covid-19 pandemic can be a tough challenge for adolescents considering that, at this time, they often leave their homes and relate more to friends than parents. Environmental factors also affect adolescents in Manggarai district not obeying

behavior to prevent the spread of Covid-19. Before the Covid-19 pandemic, the people of Manggarai Regency, including adolescents, had risky behavior such as shaking hands when meeting family, friends or acquaintances without first cleaning their hands using soap or hand sanitizer, often gathering with family and friends in traditional rituals and parties that were held almost every month. Changing risky behavior in adolescents is not easy; therefore, the role of parents in the family environment, teachers in the school environment and other adults in the community is very important in providing examples and role models for adolescents regarding attitudes and behaviors in implementing health protocols during the Covid-19 pandemic.

This study result identifies that one of the factors related significantly to adolescents' compliance to Covid-19 prevention protocol is gender. Female adolescents are more compliant compared to male adolescents with odds ratio 2.135. This study result is in line with previous study by Zhong et al. (2020) that reveals the male adolescents tend to conduct risky behavior and are non-compliant to the Covid-19 protocols compared to female adolescents (OR 1.37, 95 % CI 1.05-1.75, p value 0.019). A qualitative study by Williams, Armitage, Tampe, & Dienes (2020) reports that one 20-year-old male adolescent felt weary at home and physically and mentally discomforted during social distancing rules. Indonesian teenagers have higher rate of peer activities; based on an online survey of Indonesian adolescents' perception of Covid-19 pandemic, around 54% of respondents are frequently having outside of the house activities (UNICEF, 2020). Male adolescents tend to go out and get together with their peers without using a mask and physical distancing compared to female adolescents. In Manggarai Regency, male adolescents have a very important role in every social interaction compared to female students, so that male adolescents are more likely to have risky behaviors such as not keeping their distance and not wearing masks when making social interactions, both with peers and with the community.

Another factor identified to be correlated significantly to adolescents' compliance in this study is personal and social responsibility value. Higher personal and social responsibility value in adolescents tends to be more compliant to

prevent Covid-19 transmission compared to adolescents with lower personal and social responsibility value, with odds ratio 2.460. This result is in line with a study by Oosterhoff and Palmer (2020) that reveals the main motivation on conducting social distancing rules in the Covid-19 pandemic is social responsibility and the intention to protect others from Covid-19 infections. Personal and social responsibility value of adolescents would shape their compliancy to Covid-19 transmission prevention protocols. These responsibility values constitute the adolescents' awareness as to the significance of preventive measures and increase their compliance to government protocols on preventing Covid-19 transmissions (Oosterhoff & Palmer, 2020). The people of Manggarai Regency generally include adolescents in carrying out social interactions influenced by culture. They do not have the ability to reject the social system related to the culture of the Manggarai community, which is related to social interactions such as often gathering at traditional events, shaking hands and hugging when meeting family and acquaintances and feeling disrespectful when talking to family and acquaintances while still wearing masks. This is one of the causes of the low value of personal and social responsibility among adolescents in Manggarai Regency which affects the behavior to prevent Covid-19 transmission.

This study result also reveals the insignificant factors in predicting adolescents' compliance toward covid-19 transmission prevention, namely knowledge. This result is contradictive with previous study by Zhong et al. (2020) that reported good Covid-19 knowledge related closely to the application of Covid-19 preventive measures and optimism attitudes on a mask whenever going out. Higher Covid-19 knowledge does not guarantee adolescents being compliant to prevent Covid-19 transmission. This is proved from the results of our research which shows that most adolescents have high knowledge but do not have compliant behavior in preventing the spread of Covid-19. Adolescents with sufficient knowledge but are non-compliant possibly come from the late-adolescent age group (16-18 years old). Adolescent development stage tasks in this age group are to get together and find new experiences. This task is contradictive with social distancing rules

as one of the Covid-19 transmission preventive measures.

The other insignificant factor to adolescents' compliance identified in this study is Covid-19 severity perception. This study result is contradictive with the study by Harper (2020) that reports the most consistent factor as positive behavioral change agent, such as hand washing and physical distancing, is the fear of Covid-19. In this study, adolescents who have positive perceptions of the severity of Covid-19 still do non-compliant behavior to prevent the spread of Covid-19. This is probably caused by lack of accurate information on Covid-19 obtained. This is evidenced by the results of research where the majority of adolescents are less exposed to information about Covid-19. Previous study states that adolescents with frequent Covid-19-related news monitoring having higher significance to the Covid-19 severity perception influencing their compliant behavior (Oosterhoff & Palmer, 2020). However, in this study, the frequency of Covid-19-related information monitoring had no significant relation to adolescents' compliant behavior on preventing Covid-19 transmission. This is assumed due to the lower personal and social responsibility value. Adolescents with high frequency of information monitoring could be non-compliant to the Covid-19 transmission preventive measures because of the lack of personal responsibility to participate in the social rules. This is shown by this study result that shows a significant relationship between personal and social responsibility value and adolescents' compliance toward Covid-19 transmission prevention protocols.

This research has limitations, one of which is that the data collection process is carried out using Google Forms so that the data obtained have the possibility of bias due to the respondents' inaccuracy in filling out the form so that there are some data that the respondent forgot to fill in.

CONCLUSION

The only factor related significantly to adolescents' compliant behavior to prevent Covid-19 transmission in this study is gender among the individual factors such as age, gender and education studied. Another significant factor predicting the adolescents'

compliance to Covid-19 transmission prevention protocols is personal and social responsibility value. The most important thing and needed by adolescents in increasing compliance behavior in preventing the spread of Covid-19 is support from adult individuals, such as families, parents, teachers, health workers, the Covid-19 task force and the government to help adolescents increase their personal and social responsibility by being a good role model in implementing health protocols and supporting them to be able to spend time in contact with friends and family by complying with health protocols in preventing the spread of Covid-19. Future research should focus on the intervention measures to increase adolescents' compliance to Covid-19 prevention protocols.

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Conflict of Interest

The authors declare that there is no conflict of interest.

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