



## Analysis Factors of Motivation Among Adolescents in 3M Behavior During the Covid-19 Pandemic

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### A B S T R A C T

Confirmed cases of COVID-19 in the adolescent age group are currently still occurring. For maximum prevention efforts to be carried out, further research is needed to find out the factors related to the motivation of adolescents in implementing COVID-19 prevention behaviors such as 3M behavior (Washing hands, using masks, and maintaining distance) as an effort to prevent the transmission of COVID-19, especially in the adolescent. The purpose of this study was to identify the factors related to the motivation of adolescents in carrying out 3M behavior during the COVID-19 pandemic. This study was conducted with a cross-sectional design on 427 adolescents in Palembang City. The school sample was obtained by simple random sampling method, and the determination of respondents was carried out by purposive sampling in accordance with the research inclusion criteria are students aged 12-18 years. The analysis used in this research is univariate analysis, bivariate analysis, and multivariate analysis. The results showed that age, gender, education level, autonomy, policies, nurse support, and family support influenced the adolescents' motivation to implement 3M behavior during a pandemic. The family support factor is the factor that most influences the motivation of adolescents in carrying out 3M behavior during the COVID-19 pandemic after being controlled by other variables (age, gender, level of education, autonomy, policies, and nurse support). Knowing that family support is the most dominant factor, increasing family-based health promotion programs for adolescents during the COVID-19 pandemic is recommended.

## INTRODUCTION

COVID-19 is a virus that was first found to infect humans in Wuhan City, China, in December 2019. Since then, COVID-19 has continued to spread and invade every country, so World Health Organization (WHO) has declared COVID-19 to be a pandemic and a global health problem (Sun et al., 2020). COVID-19 is caused by the SARS-CoV-2 virus, known as the coronavirus. This virus can infect humans quickly in the respiratory system, which can cause mild health problems and even death (Wardani et al., 2022). The coronavirus has an incubation period of 1-14 days. During this incubation period, individuals infected with the coronavirus can show symptoms and no symptoms or those without symptoms (Bistara et al., 2022). COVID-19 is a virus with fast transmission power. This virus can be transmitted through droplets or cough droplets from infected individuals and can quickly infect individuals around them up to 48 hours after exposure to the COVID-19 virus (Pranata et al., 2022). For this reason, it is important to implement health promotion behavior during the Covid-19 pandemic to prevent transmission of COVID-19.

Based on WHO data, there were 970,000 cases of COVID-19 in the world in a month, which increased very rapidly in October 2020 to 44,351,506 cases in nearly 219 countries worldwide. The increase in COVID-19 cases is increasing day by day. In December 2020, there were 87,273,380 cases worldwide, with 1,899,440 deaths (Rossi et al., 2021). COVID-19 cases in Indonesia were first identified in February. Data on confirmed cases of COVID-19 in January 2021 recorded 818,386 confirmed cases of COVID-19 in 34 provinces in Indonesia (Warohmatulilla et al., 2021). COVID-19 can infect all age groups. Individuals with comorbid diseases such as hypertension, kidney failure, heart disease, asthma, and diabetes are more likely to be infected with COVID-19 (Bistara et al., 2022). COVID-19 cases in adolescents are currently an interesting focus in the world of health because adolescents are not only at risk of being infected with COVID-19 but also can spread the COVID-19 virus in their environment.

Based on data that there were 8 million confirmed cases of COVID-19 adolescents in December 2020 worldwide (Götzinger et al., 2020). In Indonesia, in January, 8.8% of COVID-19 cases occurred in the age range of 6-18 years, with 72,018 confirmed cases (Warohmatulilla et al., 2021). The fact that adolescents are also at risk of exposure to COVID-19 is a major threat to the community. This is because adolescents tend to be active outside the home. Studies show that adolescents aged 12-16 years old have a seven times higher chance of spreading COVID-19 than other ages (Oosterhoff et al., 2020). Interactions carried out by teenagers outside the home and without heeding health protocols can be a serious problem. The age group of adolescents who are exposed to COVID-19 tends to show no symptoms of infection at all. This causes adolescents who have been exposed and are asymptomatic to freely interact with their families, which allows for rapid transmission of COVID-19 due to close interactions (UNICEF, 2020).

The condition exacerbates this in that adolescents are an age group that is still vulnerable to responsiveness to their health conditions. The phenomenon of adolescents still having low in using access to health services and the use of health information can increase the risk of health threats in their teens during the current COVID-19 pandemic (UNICEF, 2020). Teenagers also tend to be more active outside the home and have difficulty controlling their activities as adults compared to the child age group (Schwartz et al., 2020). Therefore, it is important to understand 3M's health promotion behavior (Washing hands, using masks, Keeping distance) in the adolescent age group during the COVID-19 pandemic. This research aims to identify factors related to adolescent motivation in carrying out 3M behavior during the COVID-19 pandemic. This article can provide recommendations for further research on adolescent 3M's health promotion behavior during the COVID-19 pandemic. Another hope is that this article can spur an increase in 3M's health promotion efforts in the adolescent age group during the COVID-19 pandemic as one of the efforts to deal with the COVID-19 pandemic.

## METHOD

This quantitative study uses a descriptive correlation method and a cross-sectional approach. This research was conducted in Palembang City in schools spread over three sub-districts: Ilir Barat I, Sukarame, and Ilir Timur II, starting September 2020 until July 2021. Based on the results of calculating the sample size using the Lemeshow formula, it was found that the number of respondents in this study was 427 adolescents. The inclusion criteria in this study were students aged 12-18 years, living in Ilir Barat I, Sukarame, and Ilir Timur II, and having a gadget also internet access. The instrument used in this study was a questionnaire that had been tested for validity and reliability with a Cronbach alpha value of 0.84 and a correlation coefficient of 0.73 with  $r$  table = 0.05. The procedure for collecting data in this study began with the administrative stage, namely the management of passing ethical reviews and research permits at assembled institutions, then the research implementation phase was carried out in three schools spread across 3 sub-districts with the highest number of COVID-19 cases in Palembang City. In this study, statistical tests for bivariate analysis used the Pearson product-moment test ( $r$ ) and independent t-test and independent t-test and multivariate statistical tests using multiple linear regression tests. This research was conducted by prioritizing the principles of research ethics and having passed the ethical test on the FIK UI ethics committee with the test pass number SK121/UN2.F12D1.2.1/ETIK 2021.

## RESULT

The results of this study focused on factors that influence adolescent motivation in carrying out 3M behavior, namely demographic factors (age, gender, and level of education), autonomy factors, policy factors, nurse support factors, and family support factors. Table 1 shows that the respondents in this study had an average age of 15.15 years in May 2021, with an age range of 12-18 years. The gender of respondents with male sex was 182 people (42.6%), and female sex was 245 people (57.4%), and the highest level of education was high school, with a total of 283 respondents (66, 3%) and junior high school as many as 144 people (33.7%).

Table 1 Characteristic of Respondents Based on Age, Gender and Education Level of Adolescent in Palembang City, May 2021 (N=427)

Characteristic of Respondents	n	%
Age	Mean $\pm$ SD: 15,15 $\pm$ 1,057 Min – Max: 12 - 18	
Gender		
1 = Man	182	42,6
2 = Woman	245	57,4
Amount	427	100
Education		
1 = JHS	144	33,7
2 = SHS	283	66,3
Amount	427	100

Table 2 shows that all research variables, namely Age, Autonomy, Policy, Nurse Support, and Family Support, have a significant relationship with adolescent motivation in carrying out 3M behavior during the COVID-19 pandemic with a  $p$ -value  $<0.05$ . The variable with the most significant correlation coefficient is family support, with a value of  $r = 0.545$  with a positive correlation direction and strong correlation strength. The autonomy variable is  $r = 0.487$ , with a positive correlation direction and moderate correlation strength. The policy variable is  $r = 0.431$ , with a positive correlation direction and moderate correlation strength. The nurse support variable is  $r = 0.397$ , with a positive correlation direction and moderate correlation strength. The age variable is  $r = 0.156$ , with a negative correlation direction and weak correlation strength.

Table 2 Analysis of the Relationship Variables Gender, Education Level, Age, Autonomy, Policy, Nurse Support, Family Support on Adolescents' Motivation in Implementing 3M Behavior during the COVID-19 Pandemic in Palembang City, May 2021 (n=427)

Variabel	$p$ -value	
Gender	0,000	
Education Level	0,012	
Variabel	R	$p$ value
Age	-0,156	0,001
Autonomy	0,487	0,000
Policy	0,431	0,000
Nurse Support	0,397	0,000
Family Support	0,545	0,000

Table 2 shows that the gender variable has a  $p$ -value  $<0.05$ . These results also show that statistically, there is a significant difference in motivation scores between male and female students in carrying out 3M behavior during the COVID-19 pandemic. The education level variable has a  $p$ -value  $<0.05$ . This also shows that statistically, there is a significant difference in motivation scores between students with high school and junior high school education levels in carrying out 3M behavior during the COVID-19 pandemic.

Table 3 Final Multiple Linear Regression Modeling of Factors Associated with Adolescents' Motivation in Implementing 3M Behavior during the COVID-19 Pandemic in Palembang City, May 2021 (n=427)

Variable	B coefficient	Correlation coefficient	$p$	R	Adjusted R <sup>2</sup>	Std. error	$P$
Age	0,299	0,079	0,037				
Autonomy	0,289	0,238	0,000				
Policy	0,185	0,158	0,000				
Nurse Support	0,140	0,142	0,001	0,651	0,417	0,275	0,000
Family Support	0,360*	0,311	0,000				
Constant	20,483		0,000				

\*The most related variable

Based on table 3, it is known that the factor that is most related to the motivation of adolescents in carrying out 3M behavior during the COVID-19 pandemic in Palembang City is family support ( $\beta=0.360$ ).

## DISCUSSION

### Age

Based on the bivariate analysis results between age and youth motivation in carrying out 3M behavior during the COVID-19 pandemic, it showed a negative relationship ( $r = -0.156$ ) and a statistically significant relationship ( $p$ -value = 0.001), and a weak correlation strength. It can be concluded that the higher the adolescent age, the lower the adolescents' motivation in carrying out 3M behavior during the COVID-19 pandemic. Statistically, the relationship between these two variables is significant, but the correlation strength between age and adolescent motivation is weak. This shows that the age factor weakly influence on adolescents' motivation in carrying out 3M behavior. According to the theory of the Health Promotions Model, it is known that many personal factors other than age can influence individual motivation in carrying out health promotion behaviors, including body mass index, pubertal status, education, race, ethnicity, and socioeconomic status (Pender, 1987) so that the age factor cannot be fully linked to the motivation of teenagers in carrying out 3M behavior.

Respondents in this study had an average age of 15.15 years, so they were included in the middle-aged adolescent category. It is known that early to mid-adolescent abilities are still immature thinking abilities. This happens because early and middle adolescents are still looking for new values and energy and compare them with peers of the same gender, while late adolescents have comprehensive thinking abilities compared to early to mid-adolescents (Steinberg, 2014). The habit of teenagers who still often compare their behavior with their peers can have bad consequences if these peers have bad health behaviors. The results of this study are supported by research conducted in Iran, namely, adolescents aged > 15 years tend to have maladaptive behavior towards efforts to implement COVID-19 prevention behaviors (Ezati Rad et al., 2021). The research stated that the behavior of preventing COVID-19 in the adolescent age group still needs to be improved. This relates to adolescents aged > 15 years more often doing outdoor activities.

The results of this study are also in line with the theory of the developmental stages of middle-aged adolescents, namely adolescents at that age tend to seek normality in their peers, especially those of the same gender. These results align with research conducted by researchers because in this study, the average age of respondents was > 15 years, so the results obtained have similarities because the same age characteristics support them. Based on the results of the analysis and supported by previous research, it can be concluded that the higher the adolescent's age, the lower the implementation of 3M behavior. This

can happen because adolescents are in a transitional age, so maturity in thinking is not yet comprehensive. Developing health promotion programs in adolescents is necessary by involving peers as role models in carrying out health behaviors. The formation of peer groups in which there are peer leaders with good health behavior can be an example for other adolescents in normalizing their health behavior.

#### Gender

The results of the data analysis on the gender variable showed that there were significant differences in the results or motivational scores between young girls and boys in carrying out 3M behavior during the COVID-19 pandemic. In this study, female students had a higher percentage than male students. This percentage difference can affect the statistical analysis of this variable so that it shows the significance of the relationship between gender and the implementation of 3M behavior in adolescents. Adolescent women dominated respondents in this study, which could affect the study's results.

A study discussing the dimensions of adolescent health promotion behavior based on gender shows differences in the dimensions of health promotion between male and female adolescents. It is known that the dimensions of health promotion in male adolescents tend to be physical activities such as sports, while female adolescents have health promotion dimensions in dietary habits, care, and safety issues (Sa'diyah, 2013). This research was conducted long before the COVID-19 pandemic occurred, but it can be understood that differences in motivation scores in carrying out 3M behavior during the COVID-19 pandemic between teenage girls and boys could occur of not fulfilling the dimensions of health promotion in adolescent boys. For this reason, it is necessary to have differences in providing health promotion to adolescents based on their gender. Differences in the provision of health promotion can be provided by the method of peer association with the same gender.

#### Education

The results of data analysis between education level and adolescents' motivation in carrying out 3M behavior during the COVID-19 pandemic showed differences in motivation scores between adolescents with high school education level and adolescents with junior high school education level. This difference could occur due to the number of high schools sampled in this study, more than junior high schools. This can affect statistical calculations so that there are differences in motivation scores between adolescents with a high school education and adolescents with a junior high school education level.

Adolescents with a high educational background tend to have positive motivation toward healthy behavior when compared to adolescents who do not have a good educational background (RIZQI, n.d., 2017). This is in line with the research results, which showed differences in motivation scores between adolescents with junior high and high school education levels which showed that educational level influenced adolescent motivation in carrying out 3M behavior during the COVID-19 pandemic. Based on these results, it is necessary to have health promotion that is adjusted to adolescents' education level.

### Autonomy

The bivariate analysis results between the autonomy factor and adolescents' motivation in carrying out 3M behavior during the COVID-19 pandemic show a positive relationship and have a statistically significant relationship with a moderate correlation strength. These results show that the autonomy possessed by adolescents is related to adolescents' motivation in carrying out 3M behavior during the COVID-19 pandemic. The results of this study are supported by research conducted by Wang et al., (2021) which shows that adolescents who are independent and have freedom in determining attitudes have better motivation to carry out COVID-19 prevention behaviors compared to adolescents who do not yet have independence and freedom of attitude.

These results are supported by studies conducted in America which show that adolescents with the freedom and independence to determine their attitudes think that implementing COVID-19 prevention behavior is a social responsibility they have as a form of preventing other people, especially their families, from being infected with COVID-19 (Oosterhoff et al., 2020). Based on these results, providing autonomy to adolescents during the COVID-19 pandemic is necessary. Teenagers are given independence to make choices in carrying out 3M behavior, but in making these choices, teenagers must also understand the consequences that will be obtained based on the choices made.

### Policy

Based on the results of a bivariate analysis between policy factors and adolescents' motivation in carrying out 3M behavior during the COVID-19 pandemic shows a positive relationship and a statistically significant relationship. These results show a significant positive relationship between policy factors and adolescents' motivation to carry out 3M behavior during the COVID-19 pandemic. These results can be concluded that government policies to implement 3M behavior in the community environment can encourage the implementation of 3M behavior for adolescents during the COVID-19 pandemic.

The policy is part of the situational influence. Policies carried out by the government are not only supervisory but can also be in the form of providing education and facilities to the community. Policies regarding the obligation to wear masks and carried out together with education on the importance of using masks to prevent the transmission of COVID-19, have been proven to encourage the use of masks in public areas (Campbell et al., 2021). The results of this research can be used as a record for the government to improve policies in tackling the COVID-19 pandemic. Policies enforced massively and supported by strict supervision can encourage adolescents to carry out 3M behavior during the COVID-19 pandemic.

### Nurse Support

Based on the results of a bivariate analysis between the factors of nurse support and adolescents' motivation in carrying out 3M behavior during the COVID-19 pandemic shows a positive relationship

with a moderate correlation strength and a statistically significant relationship. The results of this study indicate that nurse support has a significant relationship to adolescent motivation in carrying out 3M behavior during the COVID-19 pandemic. The support provided by nurses is one part of the nurse's role, which aims to reduce the individual's risk of contracting a disease through health promotion by proactively involving individuals to reduce the potential for harm to health due to the individual's behavior (Pender, 1987).

This study's results align with previous research explaining that nurses have an important role during the COVID-19 pandemic. Nurses' support in services and professional nursing care is important in protecting the public to avoid COVID-19 infection (Alharbi et al., 2020). The importance of nurse support during a pandemic as an effort to improve health promotion behavior needs to be increased. Providing online counseling can be used as a solution to avoid face-to-face meetings so that the support provided by nurses during the pandemic can continue.

### Family Support

The bivariate analysis of family support factors and adolescents' motivation to carry out 3M behavior during the COVID-19 pandemic showed a positive and statistically significant relationship. As the closest person, the family has a strong influence in shaping adolescent health promotion behavior. Other studies are also in line with the results of this study which show that family support has a very important impact on adolescents facing a pandemic because the support provided by the family can reduce the level of fear that adolescents may have, causing adolescent health problems during a pandemic (Halty et al., 2021).

This shows that good family relationships and support in motivating and providing supporting facilities for implementing COVID-19 prevention behavior effectively increase adolescents' motivation to carry out COVID-19 prevention behavior (3M) during the pandemic. For this reason, it can be concluded that the role of family support has an important influence in increasing adolescents' motivation in carrying out 3M behavior. Family support in providing facilities, health information, and space for mental health has proven influential in increasing adolescents' motivation to implement 3M behavior during the COVID-19 pandemic.

### Factors Most Related to Adolescents' Motivation in Implementing 3M Behaviors.

Based on the results of data analysis using linear regression, it is known that the factor that influences adolescents' motivation in carrying out 3M behavior during the COVID-19 pandemic is family support, with the strongest correlation. The regression equation model can be explained as follows, once family support increases, then the motivation of adolescents in carrying out 3M behavior increases by 0.545 points. Family support is the most influential factor in adolescents' motivation to carry out 3M behavior. This can be seen from the coefficient B (0.360), which means that family support can increase 36% of adolescents' motivation in carrying out 3M behavior during the COVID-19 pandemic.



The theory of the Health Promotion Model states that the family is an important source of interpersonal influence for individuals to increase commitment in engaging themselves to carry out healthy behaviors (Pender, 1987). Interpersonal influence given by the family can strengthen individual potential and abilities to achieve a good quality of life by carrying out health behaviors (A Nies, 2014). The analysis results in this study show that family support is the most dominant factor related to adolescent motivation in carrying out 3M behavior. This study's results align with previous research showing that adolescents tend to have good motivation to carry out COVID-19 prevention behaviors if they have positive family support (Oosterhoff et al., 2020).

Other research also shows that the motivation of adolescents to carry out preventive behavior during a pandemic is caused by fears that family members are infected with COVID-19 (Luo et al., 2020). These results show that family support factors directly influence adolescents to be responsible and motivated in carrying out 3M behavior during the COVID-19 pandemic. Family-based health promotion programs can be provided through online media and promoted through community activities such as *Posyandu* or *Pos Pelayanan Terpadu* (Integrated Healthcare Center) and other activities. Education for families is important because families are the closest individuals to adolescents before and during the pandemic.

## CONCLUSION

It is known that the factors that influence adolescents' motivation in carrying out 3M behavior during a pandemic are age, gender, education level, autonomy, policy, nurse support and family support. Based on the analysis results, it is known that family support is the most dominant factor in influencing adolescents' motivation to behave 3M during the COVID-19 pandemic. For this reason, suggestions that researchers can give are that health promotion activities can be carried out in the adolescent age group during a pandemic by using the online method by utilizing online seminar application media. Health promotion activities can be carried out by focusing on gender and the level of education of adolescents and encouraging the autonomy that exists in adolescents.

There needs to be collaboration between stakeholders in regulation and supervision of 3M behavior involving community and nurses to expand the range of programs provided so that all adolescents in their work area can benefit from the program and encourage family involvement to increase adolescents' motivation in carrying out 3M behavior. The development of a nursing intervention model based on the theory of the Health Promotions Model can be carried out to facilitate health promotion activities for adolescents. Future research can develop qualitative and quasi-experimental research methods for a deeper study of the influence of demography, autonomy, policies, nurse, and family support in increasing adolescents' motivation towards 3M behavior during the COVID-19 pandemic.

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