ORIGINAL ARTICLE

Identifying the Factors Affecting Preventive Behavior against Covid-19 Transmission in East Java Indonesia

Prima Soultoni Akbar[1], Reny Nugraheni[2], Santy Irene Putri[3], Artha Budi Susila Duarsa[4], Asruria Sani Fajriah[5], Aris Widiyanto[6], Joko Tri Atmojo[6]

[1]Department of Medical Record and Health Information, Politeknik Kesehatan Kemenkes Malang, Indonesia
[2]Institut Ilmu Kesehatan Bhakti Wiyata Kediri, East Java, Indonesia
[3]Midwifery Study Program, Universitas Tribhuwana Tunggadewi Malang, Indonesia
[4]Faculty of Medicine, Universitas Islam Al-Azhar Mataram, Indonesia
[5]Midwifery Study Program, Institut Ilmu Kesehatan Strada, Indonesia
[6]Nursing Study Program, Sekolah Tinggi Ilmu Kesehatan Mamba'ul 'Ulum Surakarta, Indonesia

Corresponding Author: Reny Nugraheni **Email:** reny.nugraheni@iik.ac.id

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ABSTRACT

WHO recommends washing hands frequently, staying away from crowds, maintaining a safe distance, wearing masks, applying cough and sneeze ethics, as well as keeping the sick isolated and quarantining those in close contact to prevent Covid-19 transmission. The efforts to prevent the transmission of new cases during the adaptation to the new habits with the implementation of strict health protocols need massive enforcement. It was an analytic observational study with a cross-sectional approach. The study was conducted in East Java with 1,564 participants involved by simple random sampling technique. The dependent variable was preventive behavior against Covid-19 transmission. The independent variables included attitudes, knowledge, family support, and health worker support. The data were collected by using a questionnaire and analyzed with multiple linear regression. The study demonstrated that attitudes (B= 0.07, SE= 0.04, p= 0.034), knowledge (B= 0.08, SE= 0.04, p= 0.050), family support (B= 0.12, SE= 0.05, p= 0.012), and health workers support (B= 0.37, SE= 0.03, p<0.001) increase the preventive behavior against Covid-19 transmission. The value of R2 = 0.388, marked that the variables of knowledge, family support, and health worker support simultaneously pose an influence of 38.8% on preventive behavior against Covid-19 transmission. While the remaining 61.2% was influenced by other variables not examined.

Key words:
attitudes; Covid-19 transmission; family support; health worker support; knowledge

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INTRODUCTION

The threat of a new variant of the SARS-CoV-2 virus requires a rapid response to prevent extended transmission. Strategic measures are highly demanded to accelerate the prevention and control of COVID-19.[1,2,3] Currently, Indonesia campaigns for a strategic movement through key messages (5M), which are *memakai masker* (wearing masks), *mencuci tangan dengan sabun* (washing hands with soap), *menjaga jarak* (maintaining a safe distance), *menghindari krumunan* (staying away from crowds), and *mengurangi mobilitas* (limiting mobility), as well as implementing clean and healthy living behaviors. Covid-19 vaccination is encouraged to complement the battle against the virus through the implementation of health protocols,[4, 5] so even though vaccines are available, health protocols with 5M strategy should also be optimally applied. One of the efforts to prevent the COVID-19 transmission is wearing masks, which is often followed only to formally fulfill the regulation, whereas an optimal protection needs to consider the type and method of wearing the masks.[6, 7] The recommended masks for use are 3-layer cotton fabric masks and surgical masks.[8] The 3-layer cotton fabric masks are for daily use to limit the use of surgical masks intended for medical personnel and patients with comorbidities/high risk, and also to reduce the effects of natural pollution due to disposable mask wastes. Other preventive measures, such as hand washing, can be performed with soap and running water, and using a hand sanitizer.[9, 10] Hand washing to kill viruses and bacteria is done for at least 20 seconds and with the correct steps to ensure that the entire surface and between the fingers are clean. This transmission prevention measure should also be followed by other efforts, especially in the daily activities.[11, 12]

The coronavirus pandemic causes a lot of changes in people's everyday life.[13, 14] Good nutrition is also very significant before, during, and after infection. The infection causes the victim's body to become feverish, thus it requires additional energy and nutrients. Therefore, maintaining a healthy diet is essential during the current pandemic.[15] Although there are no foods or dietary supplements that can prevent Covid-19 infection, maintaining a healthy and nutritionally balanced diet is prominent in promoting a good immune system. Therefore, to face the current situation, society should stay healthy that they are infected by the Corona virus. Note that there is no vaccine discovered yet to prevent Coronavirus. Measuring whether they are in a healthy immune system is also difficult. Now, we must be capable of avoiding exposure to the Corona Virus and maintaining the body's immune system to stay healthy and fit.[16, 17]

Transmission of the Covid-19 virus may occur through intermediaries from humans to other humans, which is through saliva droplets and contaminated inanimate objects.[18, 19] The virus may come out of the mouth or nose of people with Covid-19 in the form of droplets when they talk, sneeze, cough, sing, or even breathe. According to WHO, current evidence suggests that the virus can spread mainly among people who make a close contact with one another within 1 meter (short distance). Somebody can be infected when aerosols or the droplets containing the virus are inhaled and enter the body directly through the nose or mouth or whenever the hands come into direct contact with the eyes. The virus can also spread within poorly ventilated and/or crowded indoor environments, in which people tend to spend more time. It occurs as aerosols floating in the air or move farther than 1 meter (long distance).[20, 21]

The efforts to prevent the transmission of new cases in the adaptation of new habits with the implementation of strict health protocols upon people’s

activities have been massively enforced, especially by the government, yet the situation proves different from expectations as many of them seem not to care about the Covid-19 transmission. The transmission prevention behavior is closely related to public attitudes and knowledge about the dangers of Covid-19 virus. Currently, people still do not totally comply with the government's appeal to put the 5M health protocol into action. Therefore, this study aims to analyze the effect of attitudes, knowledge, family support, and health worker support on the preventive behavior against Covid-19 transmission.

METHODS

Study Design and Population Sample

This was an observational analytic study with cross sectional design, conducted in East Java, from May to June 2021. It employed a simple random sampling technique with no consideration on the strata of the population. The inclusion criteria of this study were people who participated in the online questionnaire. The population referred to the entire community around East Java while the samples were those selected by using simple random sampling. To determine the sample size, it adopted the Lemeshow formula because the population size was unknown. The following is the Lemeshow formula:

$$n = \frac{z^2 p(1-p)}{d^2}$$

In the equation, n = sample size, z = standard value = 1.96 (at 5% level of significance, p = maximum estimate = 50% = 0.5, and d = alpha (0.05) or sampling error = 5%. Based on the calculations, the minimum number of the required samples was 384. This study was participated by 1,564 participants through questionnaires distributed via GoogleForms.

Research Variables and Instruments

The independent variables of this study covered attitude, knowledge, family support, and health worker support. The dependent one was a preventive behavior against Covid-19 transmission. The adopted data collection instrument was a questionnaire of several points, which covered attitude, knowledge, family support, and health worker support prepared based on literature reviews. Preventive behavior against Covid-19 transmission was measured in 12 questions, including the use of masks during the flu, hand sanitizer, soap, washing hands, keeping away from direct touch without hands washed, washing clothes after traveling, physical distancing, working from home, and obeying the isolation rules after traveling out of town.

The next questionnaire was about attitudes consisting of 14 questions, some of which were about immediate health checking once feeling feverish, dizzy, or dry cough, seeing a health worker once having symptoms come up, using a mask, maintaining personal hygiene, keeping away from touching the face and respiratory tract, washing hands with soap for 10 seconds, and keeping distance in the public spaces, keeping isolated for 14 days after travelling.

The other questionnaire was regarding the knowledge of Covid-19 prevention which consisted of 20 items, covering the meaning of Covid-19, mode of transmission, symptoms of Covid-19, the time it takes for the Covid-19 virus from the time of exposure to cause symptoms, Covid-19 vaccine, use of antibiotics, washing hands with soap and running water, severity of Covid-19, risk of contracting Covid-19, complications due to Covid-19, differences in symptoms of Covid-19 and flu, handling of Covid-19, virus transmission, measures for people

who are in contact with Covid-19 sufferers, and use of herbs.

The next questionnaire was about family support, which consisted of 10 items. It included informative, emotional, rewarding, and instrumental support. The last questionnaire was about health worker support, which consisted of 14 items, such as providing information and explanations about the symptoms of Covid-19, socialization of the Covid-19 protocols, steps for washing hands, listening carefully to complaints about symptoms that lead to Covid-19, and others.

Data Analysis

The first step taken by the authors was re-examining the collected data to find out and assess their relevance for further processing. Things considered upon editing were whether the questionnaire was completely answered, the writing was readable, and the answer was relevant. In the next stage, the researchers classified the answers into numbers. Classification was done as a sign or code within each answer. The statements in this questionnaire consisted of positive and negative statements. All assessment results were added up in a total score to proceed with SPSS program. In the next step after checking and coding, the coded data were transferred according to the computer program table. Then, it was followed with data cleaning, deleting those that did not meet the study needs. The completed data were calculated according to the required variables and transferred into the table for further data processing.

Descriptive statistics and frequency distributions were used to describe participant characteristics. Besides, it adopted Pearson`s correlation (R) to examine if there existed a linear relationship between attitude, knowledge, family support, health worker support and preventive behavior against Covid-19 transmission. The multivariate analysis in this study employed multiple linear regression to examine the factors influencing preventive behaviors against Covid-19 transmission. The linear regression direction coefficient was indicated by the letter “b”. The regression coefficient 'b' was the contribution of the magnitude of the change in the value of the independent variable. The greater the value of the regression coefficient, the greater the contribution of the change, and it went on the other way around. The contribution of changes in the independent variable (X) was also determined by a positive or negative regression coefficient.

Research Approval

This research has received ethical approval from the Research Ethics Commission of the Faculty of Medicine, Universitas Islam Al-Azhar Mataram, number 14/EC - 04/FK-06/UNIZAR/IV/ 2021.

RESULTS

Sample Characteristics

Most of the samples involved in the study were aged 26-35 (27%), female (52%), married (49%), senior high school graduate (23%), private employment (27%), and an income of ≥ Regional Minimum Wage (UMR) (51%).

Table 1. Characteristics of Study Participants (n=1,564)

Characteristics	Frequency	Percent (%)
Age		
12-16	266	17
17-25	313	20
26-35	422	27
36-45	203	13
46-55	188	12
56-65	172	11
Sex		
Male	746	48
Female	818	52
Status		
Single	451	29
Married	759	49
Divorced	354	22
Education		
Junior High School	223	14
Senior High School	363	23
A 3-year Diploma (D3)	351	22
A 4-year Diploma (D4)	210	13
Bachelor Degree (S1)	244	16
Masters' Degree (S2)	173	11
Occupation		
Housewife	216	14
Farmer	244	16
Private Employee	419	27
Self-employed	375	24
Civil Servant	310	19
Income		
< Regional Minimum Wage	764	49
≥ Regional Minimum Wage	800	51

The mean score for attitude was 35.32 ± 9.78, the mean score for knowledge was 27.70 ± 8.10, the mean score for family support was 30.77 ± 6.44, the mean score for health worker support was 29.90 ± 12.20, and the mean score for preventive behavior was 27.95 ± 8.67. Among the four dimensions of preventive behavior against Covid-19 transmission, high scores were reported for attitude and lower scores for knowledge (Table 2).

Table 2. Levels of attitude, knowledge, family support, health worker support and behavior (n= 1,564)

Variables	Mean (SD)	Range
Attitude	35.32 (9.78)	15-60
Knowledge	27.70 (8.10)	16-56
Family Support	30.77 (6.44)	19-56
Health Worker Support	29.90 (12.20)	10-60
Preventive Behavior	27.95 (8.67)	10-60

Bivariate Analysis

Bivariate analysis employed Pearson's correlation study, intended to acknowledge the relationship between the independent variables (attitude, knowledge, family support, and health worker support) and the dependent variable (preventive behavior against Covid-19 transmission). Table 3 showed the coefficient having a positive sign, which indicated that attitude and preventive behavior were positively and statistically correlated (r= 0.43, p<0.001). Knowledge demonstrated statistically significant positive correlations with preventive behavior (r= 0.38, p<0.001). Family support showed statistically significant positive correlations with preventive behavior (r= 0.11, p=0.007). Health worker support proved to have statistically significant positive correlations with preventive behavior (r=61, p<0.001).

Table 3. Correlations between attitude, knowledge, family support, health worker support, and behavior using Pearson`s correlation

Variables	n	r	*p*-value
Attitude	1,564	0.43	<0.001
Knowledge	1,564	0.38	<0.001
Family Support	1,564	0.11	0.007
Health Worker Support	1,564	0.61	<0.001

Multivariate Analysis

Table 4 indicated that attitudes (B= 0.07, SE= 0.04, p= 0.034), knowledge (B= 0.08, SE= 0.04, p= 0.050), family support (B= 0.12, SE= 0.05, p= 0.012), and health workers support (B= 0.37, SE= 0.03, p<0.001) improve the preventive behavior of Covid-19 transmission.

Table 4. Factors affecting preventive behavior against Covid-19 transmission using multiple linear regression

Factors	Unstandardized coef. (B)	SE	Standardized coef. (β)	t	*p*-value
Attitude	0.07	0.04	0.09	2.12	0.034
Knowledge	0.08	0.04	0.08	1.97	0.050
Family Support	0.12	0.05	0.09	2.51	0.012
Health Worker Support	0.37	0.03	0.51	11.87	<0.001

$F= 88.75$, p-value <0.001, $R= 0.623$, $R^2= 0.388$, Adj $R^2= 0.384$

The value of R^2 = 0.388, showed that the variables of knowledge, family support, and health worker support simultaneously posed an influence of 38.8% on preventive behavior against Covid-19 transmission. While the remaining 61.2% was influenced by other variables not examined.

Based on the data presented in Table 4, we acknowledged that the regression coefficient for the attitude variable was positive, which meant that the preventive behavior of Covid-19 transmission increased by 0.07 units if the attitude variable rose up by one unit. It suggested a significant relationship between attitudes and preventive behavior of Covid-19 transmission.

The regression coefficient for the variable of knowledge proved positive. Therefore, the higher the knowledge, the higher the preventive behavior against Covid-19 transmission. The b value of 0.08 concluded that if the knowledge value increased by one unit, the preventive behavior against Covid-19 transmission advanced by 0.08 unit. Therefore, there is a positive and significant relationship between knowledge and preventive behavior of Covid-19 transmission.

The regression coefficient for the variable of family support was marked positive, which represented that the better the family support, the higher the preventive behavior against Covid-19 transmission. The b value of 0.12 meant that if the family support value increased by one unit, the preventive behavior against Covid-19 transmission increased by 0.12 units. Therefore, there is a positive relationship between family support and preventive behavior against Covid-19 transmission, and it is statistically significant.

The regression coefficient for the variable of health worker support demonstrated positive, which meant that the better the health worker support, the higher the preventive behavior against Covid-19 transmission. The b value of 0.37 indicated that if the value of health worker support increased by one unit, the preventive behavior against Covid-19 transmission increased by 0.37 units. Therefore, there is a positive relationship between health worker support and preventive behavior against Covid-19 transmission, and it is statistically significant.

DISCUSSION

The research results show that most respondents demonstrate a good attitude. One determines his/her attitude by considering the surrounding environment.[22] Some of the factors affecting attitudes are education, age, experience, environment, and occupation.[23] It is possible that one exhibits an attitude contrary to the surrounding environment, and vice versa. Correspondingly, people are currently faced with a situation where they must take a stand in implementing the prevention of covid-19 transmission. Education can influence individuals to maintain attitudes and formulate a new attitude because education is related to their knowledge.[24, 25] A good knowledge of Covid-19, health protocols, and preventive action against Covid-19 transmission will generate a positive attitude towards the preventive behavior against Covid-19 transmission.[26] A positive attitude can lead to a good Covid-19 transmission prevention behavior as well.

Majority of the respondents in this study are knowledgeable. A lot of factors affect the respondents' knowledge about the preventive action against Covid-19 transmission, such as education, age, occupation, and other external factors.[27] Age affects knowledge as it affects one's mindset and ability to capture information.

The higher the age of an individual, the better his mindset and ability to capture information so that the knowledge also increases. However, some studies suggest that one's ability to receive or remember information decreases at certain ages or towards old age. In 2020, the World Health Organization socialized the prevention against Covid-19 transmission through health protocol guidelines that should be adhered to by the public, which comprised wearing masks, maintaining a safe distance, applying the correct cough and sneeze ethics, washing hands with soap, and limiting mobility.[28]

Families play an important role in preventing the spread of Covid-19. They can provide support to their family members and instill a culture for a clean and healthy life, getting used to washing hands and wearing masks. Family support can be informational, instrumental, rewarding, and emotional support.[29, 30] Within informational support, they can provide information about the Covid-19 virus to the family members, reminding them once they forget to wash their hands or to wear a mask. For instrumental support, they can provide masks, hand sanitizer/soap or hand washing tools, nutritious food, keep the house clean, and others. For the appreciation support, they can reward the family members who always maintain the 5 M principles to increase their motivation. For the emotional support, they can express genuine affection and attention all the time to other family members who are in self-isolation or under treatment due to Covid-19. Family provides a massive influence in forming a strong character and culture, especially for healthy behavior if they perform optimal health roles and functions, so the spread of diseases is well prevented, including that of Covid-19. One of the functions of the family is health care that maintain the health status of the family members as high as possible, either simultaneously preventive or caring for the sick members through family support.[31, 32]

During the Covid-19 pandemic, social emotional support and concrete action are badly needed.[33] Such support may also come from the health workers. Health workers can seek to utilize technology including social media to stay in touch and give support to the community.[34] The support can be through information related to Covid-19, healthy behavior campaign, and encouragement to perform preventive behavior against Covid-19. The health worker support in this study is in the form of physical and psychological comfort, attention, appreciation, and other assistance given to individuals.[35, 36]

CONCLUSION

Attitudes, knowledge, family support, and health worker support affect the preventive behavior against Covid-19 transmission. Good knowledge and a positive attitude toward preventing Covid-19 are one of the efforts to break the transmission of Covid-19. Family role is the key point to preventing the spread of Covid-19. When they show compliance with health procedures, Covid-19 transmission within the family can be minimized. Correspondingly, health workers also play an extremely significant role in dealing with Covid-19 at every level of intervention, especially at the community level through public education related to health protocols. Health workers acknowledge the promotive and preventive patterns of Covid-19 in the community.

LIMITATIONS

The respondents in this study were taken using Google Forms due to the pandemic conditions which limited researchers from reaching all respondents, so that in this study it could result in information bias that may occur, therefore to reduce the possibility of biased information, questionnaires made with Google Forms are very well explained and

use language that people can easily understand.

RECOMMENDATIONS

Based on the study results, further research on related topics can use qualitative research methods to obtain more in-depth results. In addition, quantitative research may be advanced by additional variables to examine other aspects affecting the behavior of Covid-19 transmission prevention. In practice, government might strengthen the role of families and health workers. Family is the only social institution entrusted with the first responsibility to regulate the behavior desired by the government. In this case, they are the main agents of socialization at home so that every member of the family is responsible for meeting health protocols. Also, health workers can perform preventive measures against the spread of Covid-19 virus, such as providing education to the public.

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