The Effect of Risk Perception and Self-Control on Preventive Behaviour After Covid-19 Vaccination

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Abstract. Recently, the government has loosened one of the health protocols, namely the wearing of masks. However, many people still wear masks, even though the regulations have been relaxed. Perception of the risk of being infected with COVID-19 and self-control are two predictors of the community continuing to implement health protocols after the COVID-19 vaccination. This study aims to determine the relationship and influence between risk perception and self-control on preventive behavior carried out after the COVID-19 vaccination. Respondents in this study totaled 312 people with the criteria of having been vaccinated against COVID-19, having an age range of 19–45 years, and being domiciled in JABODETABEK. This study collected data by distributing online questionnaires in the form of Google Forms. The study used a quantitative approach using the purposive sampling technique. The scales used in this study are COVID-19 Risk Perception, Brief Self-Control Scale (BSCS), and Preventive Behavior Scale, and analysis using Pearson Correlation and Hierarchical Multiple Regression. The results of the study obtained R squares of 0.071 and 0.137 ($P < 0.01$), which means that risk perception has a significant positive effect on preventive behavior by 7.1%, and when risk perception is interacted with self-control together, the results show that both affect preventive behavior by 13.7%, and the remaining 86.3% is influenced by other variables not studied. The recommendations in this study encourage the community to perceive that COVID-19 still has risks that can attack health conditions and to continue to control themselves to maintain health so that people can be encouraged to vaccinate.

Keywords: Control, Perception, Preventive, Vaccine.

1. Introduction

Since the end of 2019, the spread of the COVID-19 virus has become a worldwide concern, including in Indonesia. The COVID-19 virus began to enter Indonesia in early 2020. Since then, the Indonesian government has taken many steps so that COVID-19 cases can be controlled. Efforts that have been made by the government to date include the implementation of health protocols and vaccinations. Research that discusses how to increase people's tendency to vaccinate has not touched on psychological conditions that emphasize risk perception and self-control. This study answers the factors that can increase people's tendency to vaccinate so that the renewal of the theory that seeks to explain the increase in people's tendency to vaccinate can be achieved.

Health protocols implemented by the government include wearing masks, washing hands with soap, or using a hand sanitizer, maintaining distance, avoiding crowds, and limiting community mobilization activities. In addition, the vaccination program implemented by the government at all levels of society has so far recorded more than 192 million people who have received the

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first dose of vaccination, 142 million more people have received the second dose of vaccination, and more than 13 million people have received a booster dose (1) (2).
The government has made various efforts to reduce the number of COVID-19 cases in Indonesia. However, due to the COVID-19 pandemic that has been going on for more than two years, the stable positive cases, and the widespread vaccination program, the government has finally relaxed the health protocols that had been made previously. As of May 18, the central government officially relaxed the health protocol for wearing masks (Ministry of Health, 2022). This relaxation can be done by the community on the condition that people do it if they are healthy, and it can only be done in open places.

However, after the relaxation made by the government, there are still many people who still wear masks. In line with a survey conducted by Sari (3) with 14,000 respondents, 68% of respondents still wear masks, and 40% of respondents still apply physical distancing. In addition, a poll conducted by Handoko, Putra, Setyawan, Utomo, Lee, and Timotius (4), stated that 72% of respondents still wear masks. This is done because people already feel comfortable using masks, and they also feel afraid of being infected with COVID-19.

In line with this, based on the results of interviews with two respondents conducted by the author, they still wear masks even though they are in an open room. They reasoned that the risk of COVID-19 had not completely disappeared, so they continued to take preventive measures. They reasoned that the risk of COVID-19 has not completely disappeared, so they continue to take precautions because if they are exposed, their family will be more vulnerable to being infected more severely because there are family members who have comorbidities. This study attempts to explore the role of risk perception and self-control in supporting preventive behaviors that are still needed to support overall public health.

2. Literature Review

A person's perception or view of the risk they are facing is referred to as their risk perception. Risk perception is a person's subjective evaluation of a risk that endangers them now or in the future (5)(6). The risk of harm can be in the form of events, situations, natural disasters, or places made by humans. The risk perception in this study is the COVID-19 pandemic.
Research conducted by Karsiyati and H (7) states that risk perception has an influence on one of the preventive behaviors, namely maintaining distance in the community. A person's perception of the risks he faces can enable him to implement preventive behavior, meaning that the application of preventive behavior carried out by a person is because he feels the risk of COVID-19 is still high (8).

Prevention efforts, or preventive behavior carried out by a person, is a form of effort to maintain their health that aims to prevent disease or detect it before symptoms appear (9). It is not easy to make this prevention effort if someone is not used to it (10). However, the COVID-19 pandemic forces and requires all people to comply with implementing health protocols that have been made by the government.

The implementation of preventive behavior carried out by a person does not escape the self-control he has. This is because if a person does not have good self-control, his contribution to the implementation of preventive behavior will not occur. However, if a person can control

himself well, then he will prepare himself, regulate negative emotions, and adapt to new regulations that apply during the pandemic (11).

Self-control is a person's capacity to react and act in accordance with existing societal rules to support long-term goals (12). Self-control in the context of a pandemic can have adverse effects on oneself and others. A person's inability to control themselves can endanger others to the point of death, and a person's success in controlling themselves can have a positive impact so that it can maintain the health of many people (13).

Research conducted by Wolff et al.(14) states that there is an influence of self-control on one of the preventive behaviors, namely compliance in maintaining distance. This means that if a person's self-control is high, it will make him apply preventive behavior. The same thing was also concluded in Al'fathan's research (15): that self-control has an influence on preventive behavior carried out by individuals during the COVID-19 pandemic.

The self-control that a person has can make him consider the behavior he causes so that he avoids exposure to dangerous situations (16). Individuals who have long-term goals will be directed to implement preventive behavior so that they can maintain their health during the COVID-19 pandemic.

Based on the explanation above, it shows that there is an influence between risk perception and self-control on preventive behavior carried out by someone after the COVID-19 vaccination. Risk perception and self-control both encourage individuals to maintain their health so that they are involved in implementing preventive behavior. Therefore, this study assumes that there is an influence between risk perception and self-control on preventive behavior after the COVID-19 vaccination.

3. Method

This research uses a quantitative approach with certain samples and populations. This research tests the theory objectively by using variables, and then the data obtained using questionnaires will be analyzed to test the hypothesis in this study.

Respondents in this study are people with an age range of 19–45 years who have been vaccinated against COVID-19 and live in JABODETABEK. Respondents in this study totaled 312 people. Targeted sample technique, or purposive sampling, which is where the criteria set in this study are used to determine the sample. Respondents were found at community health centers (Puskesmas) that provide vaccinations to the community. Respondents completed the questionnaire in person on paper or with a Google Form submitted online.

Table 1. Respondent's Demographic Characteristics

Demographic Information		Frequency (n)	Percentage (%)
Status	Student	177	56,7
	Worker	119	38,1
	Other	16	5,1
Total		312	100
Gender	Female	252	80,8

	Male	60	19,2
Total		312	100
Age	19-24 Year	220	70,5
	25-29 Year	79	25,3
	30-34 Year	5	1,6
	35-39 Year	5	1,6
	40-45 Year	3	1,0
Total		312	100
Domicile	Jakarta	105	33,7
	Bogor	38	12,2
	Depok	39	12,5
	Tangerang	54	17,3
	Bekasi	76	24,2
Total		312	100

Based on the data from Table 1, it can be concluded that most of the respondents are female students with an age range of 19–24 years old and domiciled in Jakarta.

3.1. Instrument

Preventive Behavior Scale

In this study, preventive behavior was measured using the Preventive Behaviour Scale, adapted by Yıldırım & Güler (17) from Brug et al.'s 2004 study on SARS and preventive behavior. One of the items on this instrument is "Wore a Mask." This measure has 16 statement items and is unidimensional, with answer options using a 5-point Likert scale ranging from 1 "never" to 5 "always." This measuring instrument has a Cronbach's alpha value of 0.829.

Risk Perception Scale

The COVID-19 risk perception measurement developed by Dryhurst et al. (18) was used to measure risk perception in this study. On this scale, there are six statement items with three dimensions, namely cognitive, affective, and temporal-spatial dimensions. One of the items on this instrument is “Getting sick with the coronavirus can be serious”. In addition, this measuring instrument uses a 5-point Likert scale, starting from 1 ("Strongly Disagree", "Not at All Concerned", and "Not at All Likely") to 5 ("Strongly Agree", "Very Concerned", and "Very Likely"). Based on the reliability test in this study, the Cronbach's alpha value is 0.758.

Self-Control Scale

The Brief Self-Control Scale (BSCS) measuring instrument developed by Tangney et al. (19) and adapted into Indonesian by Insancita (20)was used to measure self-control in this study. This instrument has five dimensions, namely self-discipline, non-impulsive behavior, healthy lifestyle, work ethic, and reliability. One of the items on this instrument is “I have trouble concentrating”. The instrument has 13 statement items and is scored using a 4-point Likert scale. Responses range from 1 "strongly disagree" to 4 "strongly agree." A Cronbach's alpha value of 0.780 was obtained based on the reliability test in this study.

3.2. Data Analysis Technique

The data analysis used in this study is twofold: Pearson Product Moment correlation test to see the relationship between risk perception and preventive behavior and self-control with

preventive behavior, then multiple regression hierarchy test will be conducted to see the influence between risk perception and self-control on preventive behavior.

4. Result

The description of risk perception can be seen from the mean, maximum, and minimum values of respondents who filled out the COVID-19 Risk Perception measuring instrument questionnaire. The mean value of risk perception in this study was 16.36 (SD = 3.871). As for self-control, the mean value is 33.83 (SD = 4.091), and preventive behavior is known to have a mean value of 55.07 (10.596). Based on these results, it can be said that participants have a fairly high perception of risk, self-control, and preventive behavior.

4.1. Results of the Risk Perception Correlation Test with Preventive Behavior

The first hypothesis in this study states that there is a relationship between risk perception and preventive behavior. To find out the relationship, this study used correlational test analysis techniques. The results of the correlation analysis can be seen in Table 2.

Table 2. Results of the Risk Perception Correlation Test with Preventive Behavior

	Preventive Behaviour	**Sig.**
Risk Perception	,267	,000

The results of the correlation test analysis showed a significant positive relationship with a correlation coefficient of 2,267 and a probability value of 0.000 ($p < 0.01$). Based on these results, it proves that the hypothesis that there is a relationship between risk perception and preventive behavior is accepted. This means that the higher the risk perception, the higher the preventive behavior. Conversely, the lower the risk perception, the lower the preventive behavior.

4.2. Results of the Self-Control Correlation Test with Preventive Behavior

The second hypothesis in this study states that there is a relationship between self-control and preventive behavior. To find out the relationship, this study used a correlational test analysis technique. The results of the correlation analysis can be seen in Table 3.

Table 3. Results of the Self-Control Correlation Test with Preventive Behavior

	Preventive Behaviour	**Sig.**
Self-Control	,244	,000

The results of the correlation test analysis showed a significant positive relationship with a correlation coefficient of 2,244 and a probability value of 0.000 ($p < 0.01$). Based on these results, it proves that the hypothesis that there is a relationship between self-control and preventive behavior is accepted. This means that if people have high self-control, their preventive behavior will also be high. Conversely, if people have low self-control, their preventive behavior will also be low.

4.3. Multiple Regression Test Results

The third hypothesis states that there is an influence between risk perception and self-control on preventive behavior. To find out this influence, this study uses the hierarchical multiple regression test analysis technique. The regression analysis results can be seen in Table 4.

Table 4. Regression test results of risk perception and self-control on preventive behavior

Model	R	R Square
1	,267	,071
2	,370	,137

Based on the regression test in Table 4 in Model 1, the coefficient (R) value is 267 with an R square of 071, which means that risk perception has an influence on preventive behavior by 7.1%. In Model 2, the R coefficient is 370 and the R square is 137. This means that risk perception, when simultaneously interacted with self-control, has an influence of 13.7% on preventive behavior.

Table 5. Anova (Uji F)

F	Sig.
24,457	,000

Based on the F test in Table 5, the F coefficient value is 24.457 with a probability value of 0.000 ($p < 0.01$), which shows that risk perception and self-control have a significant positive effect on preventive behavior.

Table 6. Coefficient of Risk Perception and Self-Control on Preventive Behaviour

Model		*Unstandardized Coefficients*		Sig.
		B	***Std. Error***	
1	Risk Perception	,731	,150	,000
	Risk Perception	,762	,145	,000
2	Self-Control	,663	,137	,000

Dependent Variable: Preventive Behaviour

Based on the coefficient test results in Table 6, it can be seen that the interaction of risk perception on preventive behavior in model 1 has a β value of 731. Meanwhile, model 2 shows the interaction between risk perception and self-control on preventive behavior with a β value of 762 and a probability value of 0.000 ($p < 0.01$). While the self-control variable influences preventive behavior by 663, with a probability value of 0.000 ($p < 0.01$).

5. Discussion

The results of this study indicate a relationship between perceived risk and preventive behavior. In other words, when the perception of risk is high, the application of preventive behavior is also high, and when the perception of perceived risk is low, the application of preventive behavior is also low. Research that discusses how to increase people's tendency to vaccinate has not touched on psychological conditions that emphasize risk perception and self-control. This study answers the factors that can increase people's tendency to vaccinate so that the renewal of the theory that seeks to explain the increase in people's tendency to vaccinate can be achieved.
Perception of the perceived risk of COVID-19 is one of the determinants of a person's decision to implement preventive behavior in an effort to maintain their health (21). The results of this

study are in line with previous research conducted by Karsiyati & H (7), which found that risk perception has a positive effect on one of the preventive behaviors, namely physical distancing in the community.
People who have a high perception of the risk of COVID-19 will pay more attention to their behavior in order to maintain health during the pandemic (22). Because they are aware that every behavior they cause will have an impact not only on themselves but also on the people around them. Awareness of maintaining health will certainly provide dependence in life, both for individuals and others.

One of the research results obtained in this study is that there is a significant positive relationship between self-control and preventive behavior carried out by the community after the COVID-19 vaccination. Self-control makes a positive contribution to individual efforts to maintain health despite the risk of contracting the virus. In the end, individuals will make efforts to vaccinate to maintain their health and avoid the risk of contracting the virus.
According to Tangney et al. (19), self-control is a person's capacity to control behavior in accordance with regulatory standards that exist in society. Regulatory standards in the context of the COVID-19 pandemic include the implementation of health protocols, namely

wearing masks, using hand sanitizers, maintaining distance, avoiding contact, and limiting mobilization. These regulations exist to support long-term goals during the COVID-19 pandemic, namely reducing the rate of COVID-19 cases in Indonesia.
Consistent with this, research conducted by Al'fathan (15) found a significant relationship between self-control and the application of preventive behavior during the COVID-19 pandemic. Meanwhile, risk perception also shows a significant positive correlation with preventive behavior (23). The results of this study support previous research on risk perception and self-control in preventive behavior.

Furthermore, the results of the hierarchical regression test that has been carried out in this study show that risk perception and self-control simultaneously affect the preventive behavior carried out by the community by 13.7%, while the remaining 86.3% is influenced by other factors that are not explained in this study. Although there has been research showing that risk perception and self-control have correlations with other health behaviors (24), this study contributes knowledge about how risk perception and self-control can encourage individuals to have specific health behaviors, namely preventive behaviors.

Risk perception and self-control each have a role in encouraging someone to implement preventive behavior after the COVID-19 vaccination. Preventive behavior occurs because individuals perceive COVID-19 as a risk that endangers their health (21). In addition, a person's self-control can suppress impulsive behavior so as to encourage him to participate in prevention efforts that benefit many people (13).

There are several factors that can increase or decrease risk perception, 1) voluntariness: If the risk is taken voluntarily without any encouragement from the environment, the individual will perceive the risk as lower. 2) Knowledge: Unknown risks are considered more frightening, and an unknown virus will further increase the individual's risk perception of the virus. 3) Visibility: Invisible risk factors are perceived as more dangerous than visible risk factors. 4) Trust: If individuals have low trust in those who manage risk, then their perception of risk that endangers

them will increase (25). Therefore, further researchers should emphasize the factors that can increase risk perception.

6. Conclusion

Based on the results of the above research, it can be concluded that there is a significant positive relationship between the perception of the risk of COVID-19 and the preventive behavior carried out by the community. In other words, the higher the perception of the risk of COVID-19 a person has, the higher the preventive behavior he or she will adopt. Second, there is a significant positive relationship between self-control and preventive behavior in the community, with high self-control leading to greater adoption of preventive behavior. Thirdly, the regression analysis shows that risk perception and self-control together influence the preventive behavior of the community by 13.7%, and the remaining 86.3% is influenced by other things not examined in this study. The research that has been done is far from perfect; therefore, input is needed to get maximum results. This study has weaknesses, namely respondents who have a limited range, such as age and demographics, of having had the COVID-19 vaccination.

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