

# **Safety Perceptions Analisis of Adherence to the Use of Personal protective Equipment (PPE) for Professional Students at RSGM**

**Unsoed Purwokerto**

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## **ABSTRACT**

Compliance with the use of personal protective equipment (PPE) is one of the controls to avoid the danger of infection due to work accidents. Behavior can be influenced by individual beliefs or perceptions to take an action, this is in accordance with the concept of the health belief model which states the relationship between beliefs and health behavior. Compliance with the use of personal protective equipment (PPE) at Unsoed Dental Hospital was not in accordance with the quality indicator standard, which was 88.4% based on the results of the infection prevention and control team reporting. This study aims to analyze safety perceptions of adherence to the use of personal protective equipment (PPE) for professional students at RSGM Unsoed Purwokerto. The research method is quantitative with a cross sectional approach. The research population was all active professional students using simple random sampling. Data is collected using a questionnaire and data analysis is conducted with Moderating Regression Analysis in the SPSS program. The results showed that there was a relationship between perceptions of susceptibility, severity, benefits, and coes to action on compliance with the use of personal protective equipment (PPE) for professional students at RSGM Unsoed.

**Keyword:** Perception, Health Belief Model, Compliance, Personal Protective Equipment

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## **1. Introducing**

The behavior in using personal protective equipment (PPE) is one control for professional students to avoid dangers in the hospital when doing nursing actions. This is based on the spread of infectious diseases that can be transmitted through blood and body fluids from the patient to the environment. Healthcare-associated infection is an infection that develops in health services and associated with activities to get or provide services (WHO, 2002). Personal protective equipment (PPE) is a way that workers can use to protect part or all of their bodies from potential hazards or work accidents.

In relation to compliance, behavior plays a very important role. One of the behavioral theories is widely used in health behavior is the Health Belief Model (HBM). The basis of HBM is people's motivation to act and emphasizes how individual perceptions lead to motivation and motion causes some behavior. This model shows the relationship between beliefs and health behaviors. HBM assumes it forms appropriate health behavior based on

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personal beliefs (Glanz, Rimer, Lewis, 2002).

Rumah Sakit Gigi dan Mulut (RSGM) of Jenderal Soedirman University is a hospital that has been accredited by the Hospital Accreditation Committee (KARS) 2012. The level of compliance with the use of personal protective equipment at RSGM Unsoed in 2018 is still below standard hospital quality indicators. Based on this, the researchers were interested in analyzing the analysis of the safety perceptions of professional students on the compliance with the use of personal protective equipment (PPE) at RSGM Unsoed Purwokerto.

## 2. Literature Review

Health belief model is a concept that reveals the reasons for individuals to want or not to do healthy behavior (Janz and Becker, 1984). The health belief model was first proposed by Resenstock 1988, which can be interpreted as a theoretical construct regarding individual beliefs in healthy behavior (Conner, 2005). The basis of HBM is people's motivation to act, and emphasizes how individual perceptions lead to motivation and movement, and cause some behavior. This model shows the relationship between beliefs and health behaviors. HBM assumes it forms the right health behavior based on personal beliefs (Green and Murphy 2014).

Research conducted by Wright (2019) shows a positive correlation between perceived susceptibility and perceived severity to compliance with the use of personal protective equipment (PPE) in wastewater workers. Workers feel they are at risk for occupational diseases, so they will be more compliant with wearing PPE. The HBM theory states when the perceived severity of a disease increases, the likelihood of taking preventive measures to reduce the likelihood of developing the disease should also increase (Yousafzai, 2015). Consistent with the results, other studies conducted on nurses realized that they were at increased risk of contracting some pathogens or diseases that work in the health care field. This explains that contracting pathogenic infections can lead to the development of chronic disease, generalized infections, and possibly death. Nurses feel their family may be at risk of infection if they do not take the necessary precautions to prevent contracting blood-borne infections (Malaguti, 2008).

**H1:** *Perceived susceptibility* the safety of professional students has a positive effect on compliance with the use of personal protective equipment.

**H2:** *Perceived severity* the safety of professional students has a positive effect on compliance with the use of personal protective equipment.

Research conducted by Tang et al (2004) on SARs patients showed that perceived benefits, perceived susceptibility, cues to action, and a positive effect on the use of facemasks to prevent severe acute respiratory syndrome (SARs). With environmental and policy support, these individual preventive behaviors can be transferred to effective population-level prevention efforts (McKinlay, 1999; Stokols, 1996). The belief that SARs prevention behavior is carried out because the person thinks the preventive behavior will be effective (perceived benefit), whether the costs of doing this behavior (perceived barriers) outweigh the benefits, and whether there is anything to trigger this behavior. Action cues can be internal, such as perceptions of the state of the body, or external, such as the influence of mass media and social pressure. Based on the results of this study, it is stated that individuals who have a strong belief in the effectiveness of using masks to prevent SARs are 1.4 times more likely to use masks than those who don't have this belief (Lagerlund et al, 2000).

**H3:** *Perceived benefits* the safety of professional students has a positive effect on compliance with the use of personal protective equipment.

Compliance to the use of personal protective equipment shows low results in a study conducted by Neves et al., 2011 on nurses regarding occupational safety and interpersonal relationships. Based on the results of this study, there are factors that inhibit non compliance with the use of personal protective equipment including inadequate physical structure, availability and access to personal protective equipment, lack of routine, and excessive work. Compliance is determined by the context experienced in the workplace, and individual values and beliefs, but the final decision on the use of personal protective equipment is a decision of the individual himself which can be influenced by perceptions that are considered as an obstacle to carrying out this behavior.

**H4:** *Perceived barrier* the safety of professional students has a positive effect on compliance with the use of personal protective equipment.

*Perceived Cues to action* is a behavior is influenced by something that is a signal for someone to take an action or behavior. Initially, the health belief model only has four concepts, namely perceived susceptibility, perceived severity, perceived benefits and perceived barrier. RosenStock states that a combination of perceived susceptibility and severity provides the motivation for action, and a comparison of perceived benefits and barriers provides the means or course of action. Therefore, as perceived susceptibility, severity, and benefits become stronger and perceived barriers become weaker, the likelihood of adopting health precautions increases.

**H5:** *Perceived cues to action* the safety of professional students has a positive effect on compliance with the use of personal protective equipment.

*Perceived self-efficacy* can be interpreted as self-confidence in having the ability to do the expected action. Research conducted by Yousafzai et al, (2015) states a high perceived self-efficacy has a guarantee that someone takes action or behavior compared to obstacles that must be avoided. Conversely, someone who has doubts about their abilities will avoid actions that become tasks to be done or completed. The results showed that high perceived self-efficacy increased adherence to the use of universal precautions in first-level health facilities.

**H6:** *Perceived self-efficacy* the safety of professional students has a positive effect on compliance with the use of personal protective equipment.

The research design model has illustrated in Figure 1.

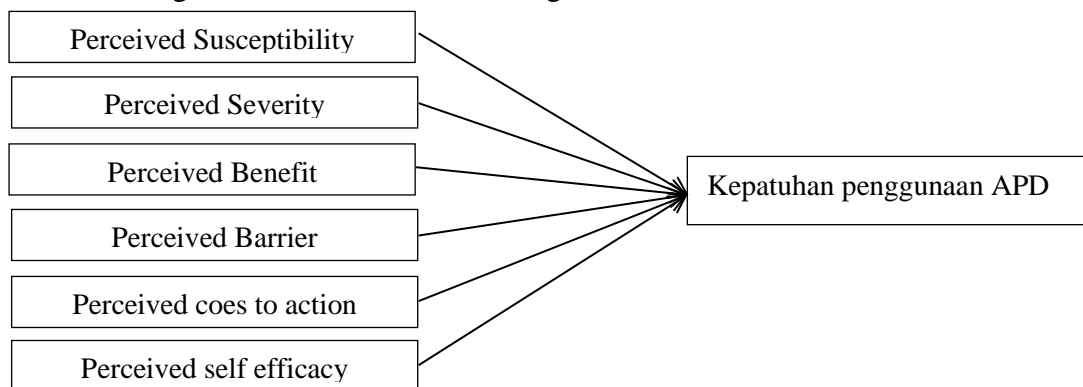


Figure 1. Research Model

### 3. Research Methodology

This research used quantitative research with a cross-sectional approach. The population of this study were all students of the active dentist profession, using the simple random

sampling method with a total sample of 61 people. The independent variable in this study is perceived susceptibility (X1), perceived severity (X2), perceived benefits (X3), perceived barriers (X4), perceived cues to action (X5), perceived self-efficacy (X6), and the dependent variable is compliance use of personal protective equipment (PPE) (Y). The research instrument used a questionnaire on a Likert scale with a score range of 1-5. Data was analyzed using Regression Analysis with the SPSS program.

#### 4. Result

##### 4.1 Reliability and validity analysis

Reliability test using Cronbach's Alpha. The questionnaire is reliable if the r alpha value > r table (0.369). The validity test uses Pearson Product Moment, the calculated r value > r table (0.444) with a significance level of 0.05. This shows that all questionnaire statement items in this study are reliable and valid.

Table 1. Reliability Test Results

	Cronbach's Alpha	N of Items
X1	.793	6
X2	.773	5
X3	.842	4
X4	.703	6
X5	.865	7
X6	.819	6
Y	.700	4

Table 2. Validity Test Results

	Person Correlation	N of Items
X1	(0.548-0.819)	6
X2	(0.478-0.833)	5
X3	(0.789-0.848)	4
X4	(0.438-0.766)	6
X5	(0.649-0.865)	7
X6	(0.622-0.832)	6
Y	(0.700-0.835)	4

##### 4.2 Ordinary Least Square

###### 4.2.1 Normality test

The results of the analysis of the normality test using Kolmogorov-Smirnov show that the value Asymp. Sig. (2-tailed) or the p value of standardized residual (0.921) > p > 0.05. Standardized residual value curve is said to spread normally, so that the data is normally distributed.

###### 4.2.2 Multicollinearity and Heteroscedasticity test

We can see multicollinearity from the tolerance value and Variance Inflation Factor (VIF). The regression model does not occur multicollinearity. This value is under the terms of multicollinearity (tolerance > 0.10 or VIF < 10). Or in other words, the independent research variable is free from symptoms of multicollinearity, because the VIF value < 10. Heteroscedasticity can be determined by calculating the regression efficiency of each independent variable on the absolute value of its residue (e), if the probability value is greater than the alpha value (0.05). The results of the heteroscedasticity test show that the regression model does not contain heteroscedasticity because the significance value of independent variables is obtained by a sig (p) value > 0.05.

### 4.3 Regression Analysis

#### 4.3.1 Coefficient of determination and simultaneous effect test (F)

From the calculation the obtain value the coefficient of determination (adjusted  $R^2$ ) of 0.825. This means that 82.5% dependent variable will be explained by the variation of the independent variables, while 17.5% will be explained by factors other than the six independent variables. The independent variable simultaneously influences Y simultaneously, it shows the results of the calculated F value of 48.275 with a significant F of 0.000 or p value < 0.05 (5%), thus stating that simultaneously all independent variables influence dependent variable.

#### 4.3.2 Multiple Linear Regression Analysis

Multiple linear regression test is used to determine how the independent variable influences the compliance with the use of personal protective equipment (Y).

Table 3. Regression Analysis

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.141	.580		3.689	.001
	Perceived susceptibility	.066	.026	.264	2.499	.016
	Perceived Severity	.073	.032	.224	2.261	.028
	Perceived Benefit	.092	.042	.249	2.194	.033
	Perceived Barrier	.009	.024	.023	.364	.718
	Perceived Coes to action	.062	.027	.246	2.270	.027
	Percieved self efficacy	.005	.038	.014	.138	.891

a. Dependent Variable: Kepatuhan Penggunaan Alat Pelindung Diri (APD)

Table 3 shows that result variables of perceived susceptibility (X1), perceived severity (X2), perceived benefits (X3), perceived cues to action (X5) have a significance value of  $p < 0.05$ , while perceived barrier (X4) and perceived self-efficacy (X6)  $p > 0.05$ .

## 5. Discussion

Perceived susceptibility the safety of professional students has a positive effect on compliance with the use of personal protective equipment. Individual perceptions about the possibility of contracting a disease will influence behavior, especially for prevention. A person will take action when they feel that they are likely to get sick. The vulnerability felt by each individual is different depending on the perception of the risk faced by individuals in a particular situation (Frances, 2005). The perception of the vulnerability of professional students if they do not use personal protective equipment is feeling exposed to all infections that can arise while working. The results show the suitability of the hypothesis is in line with Wright's (2019) research conducted on wastewater workers, which states that perceived susceptibility or perceived susceptibility to a disease or occupational hazard affects compliance with the use of PPE. Perceived severity affects the compliance with the use of personal protective equipment. Professional students carry out clinical learning by providing direct care to patients. Here, professional students assume that the patient does not fully know his own health, including the disease he is suffering from. With hospital-acquired infections, this is very dangerous to personal life, thus influencing them to take proper precautions by using

personal protective equipment. The results are in line with Efstathiou (2011) who said that when the perceived severity of a disease increases, the likelihood of taking preventive measures to reduce the likelihood of developing the disease must also increase.

Perceived benefits the safety of professional students has a positive effect on compliance with the use of personal protective equipment. Individuals will consider an action whether it is beneficial to reduce the threat of disease so they will take preventive measures. The benefits that are felt to the use of PPE for professional students include feeling that they are safe when using PPE during clinical learning, this will affect the results of the treatment given to patients. The results are in line with Tang's (2014) research which states that the belief that SARs prevention behavior using facemasks is carried out because according to them this preventive behavior will be effective (perceived benefits) to protect oneself from disease. Perceived cues to action on the safety of professional students have a positive effect on compliance with the use of personal protective equipment. Cues to action is the perception of something that is a signal for someone to take action (trigger). A person who perceived susceptibility, severity and benefits to be stronger than the constraints, increases the likelihood of adopting health precautions, the same with the compliance behavior of using personal protective equipment for professional students.

Perceived barrier and perceived self-efficacy of professional student safety have no effect on compliance with the use of personal protective equipment. The perception of perceived barrier is related to the perception of susceptibility which is one of the strongest elements in influencing individual perceptions to immediately take action in accordance with health behavior. The greater the perception of susceptibility to a disease, the greater the incentive to reduce the threat or danger of the disease. One of the obstacles in the use of personal protective equipment is the availability of facilities, but in this case professional students do not consider this a barrier. Because every professional student is personally required to have basic personal protective equipment, this problem of availability is not perceived as a barrier so that it does not affect the compliance of personal protective equipment. It is important to have the perception of barriers about the use of personal protective equipment before taking action, but compliance to the use of personal protective equipment will not happen except when someone gets a stronger incentive to motivate someone to act according to their knowledge.

Self-efficacy related with motivation and action, regardless of whether the belief is objectively correct or not. Thus, behavior can be predicted through perceived self-efficacy (a person's belief in his or her abilities), although that behavior can sometimes differ from actual ability due to the importance of perceived self-efficacy. The results of this study indicate that perceived self-efficacy has no effect on compliance with the use of personal protective equipment. According to Green in Notoatmodjo (2007) a person's belief about one's ability alone is not enough to influence actions. Additional factors that can influence include supervisory factors that can increase motivation in changing one's behavior. The existence of good supervision can increase self-awareness to be able to shape behavior so that consistent supervision is one of the things that must be considered. Supervision is carried out on professional students carried out by the supervisor in charge of the patient and the infection prevention and control team at RSGM Unsoed. Supervision that is carried out regularly provides motivation for dentist professional students to always using personal protective equipment every time they take action on patients.

## 6. Conclusion

Based on the results of the study, there is an effect of perceived susceptibility, perceived severity, perceived benefits, and perceived cues to action on compliance with the use of personal protective equipment in dental profession students at RSGM Unsoed. Future research is expected to be able to examine external factors such as supervision and using observation methods by directly assessing the level of compliance with the use of personal protective equipment.

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