



## ORIGINAL RESEARCH

# KNOWLEDGE, ATTITUDE, AND PERCEPTION OF PEOPLE IN COMPLIANCE WITH THE COVID-19 HEALTH PROTOCOL

*Pengetahuan, sikap, dan Persepsi Masyarakat terhadap Kepatuhan Protokol Kesehatan Covid-19.*

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### ABSTRACT

**Background:** The COVID-19 pandemic has infected many people and impacted the political, economic, social, cultural, defence, security aspects, and welfare of society. One of the regions of Indonesia with the most cases is East Java Province which has reached more than 46,984 confirmed cases. **Purpose:** This study aimed to analyze self-awareness and the amount of risk in terms of knowledge, attitudes, and perceptions of the people of East Java Province with compliance with the COVID-19 health protocol after the adaptation of new habits. **Methods:** This study used a cross-sectional study design. This study was conducted with inclusion criteria in people who live in East Java Province, have a productive age of female (15-49 years) and male (15-59 years), and are willing to be respondents in the study. Exactly 285 respondents participated in the study. This study measure demographics, knowledge, attitude, perception, and practice of health protocols variables. We used a questionnaire to collect data via a google form. The data were analyzed using the Chi-square test. **Results:** The results showed that there was a relationship between attitudes and perceptions about COVID-19 on compliance with the COVID-19 Health protocol (p-value = 0.01), and there was no relationship between knowledge (p-value = 0.58), age (p-value = 0.66), sex (p-value = 0.61), and education (p-value = 0.23) with compliance with the COVID-19 Health protocol. **Conclusion:** Respondents' compliance with the COVID-19 health protocol is still low. Community education efforts are needed to implement health protocols.

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## ABSTRAK

**Latar belakang:** Pandemi COVID-19 telah menginfeksi banyak orang dan berdampak pada aspek politik, ekonomi, social, budaya, pertahanan, keamanan, dan kesejahteraan masyarakat. Salah satu wilayah Indonesia dengan kasus terbanyak ialah Provinsi Jawa Timur yang telah mencapai lebih dari 46.984 kasus konfirmasi. **Tujuan:** Penelitian ini bertujuan untuk menganalisis besaran risiko dari segi pengetahuan, sikap, dan persepsi masyarakat Provinsi Jawa Timur terhadap kepatuhan protokol kesehatan COVID-19 pasca adaptasi kebiasaan baru. **Metode:** Penelitian ini menggunakan desain studi *cross-sectional*. Kriteria inklusi dari penelitian ini adalah masyarakat yang berdomisili di Provinsi Jawa Timur, memiliki usia produktif berjenis kelamin perempuan (15-49 tahun) dan berjenis kelamin laki-laki (15-59 tahun), serta bersedia menjadi responden dalam penelitian. Sebanyak 285 responden berpartisipasi dalam penelitian ini. Kami mengukur variabel demografi, pengetahuan, sikap, persepsi, dan praktik protokol kesehatan. Penelitian ini menggunakan kuesioner untuk mengumpulkan data melalui *google form*. Analisis data menggunakan uji *Chi-square*. **Hasil:** Hasil penelitian menunjukkan bahwa terdapat hubungan antara sikap dan persepsi tentang COVID-19 terhadap kepatuhan protokol kesehatan COVID-19 ( $p$  value = 0,01), dan tidak terdapat hubungan antara pengetahuan ( $p$  value = 0,58), usia ( $p$  value = 0,66), jenis kelamin ( $p$  value = 0,61), dan pendidikan ( $p$  value = 1,00) terhadap kepatuhan protokol kesehatan COVID-19. **Kesimpulan:** Kepatuhan responden terhadap protokol Kesehatan COVID-19 masih tergolong rendah. Upaya pendidikan masyarakat diperlukan untuk mengimplementasikan protokol kesehatan.

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## INTRODUCTION

Corona Virus Disease 2019 (COVID-19) is an infectious disease caused by the Coronavirus class, i.e., Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). Most cases of COVID-19 have symptoms of acute respiratory distress such as fever, cough, and shortness of breath. This COVID-19 case varies from the absence of symptoms to a severe scale, causing pneumonia, acute respiratory syndrome, kidney failure, and death (Ministry of Health RI, 2020). The COVID-19 disease has become a world epidemic, and many countries in the world are affected. On March 11, 2020, WHO officially declared the COVID-19 pandemic (Qazi et al., 2020).

The COVID-19 pandemic is a serious problem for the world and requires intensive handling. The spread of COVID-19 has affected almost all provinces in Indonesia, both in the political, economic, social, cultural, defence, security aspects, and Indonesian welfare.

Indonesia also reported positive cases of COVID-19, reaching 373,109 with 12,857 confirmed deaths (Ministry of Health RI, 2020).

Excessive feelings of worry or anxiety often arise during this COVID-19 pandemic. Worries are a normal reaction to the pandemic, especially without knowing when the pandemic will end (Ilpaj & Nurwati, 2020). Several factors are associated with anxiety during the COVID-19 pandemic, including the fast epidemic spread, limited mobility, panic buying, scarcity, and rising food prices in the community (Tunda et al., 2020).

The COVID-19 pandemic is assumed to be a long-lasting process. One way to deal with this pandemic is to know the correct recommendation of health policies and practice it (Hossain et al., 2020). Handling the COVID-19 pandemic requires cooperation between governments and communities within a country. It will be effective with good adherence to the health protocols established by the government to break the chain of transmission of COVID-19 (Yunus & Rezki, 2020). Adherence has a positive correlation with

increased self-awareness. A study on traffic law compliance states that the more obedient the person is, the more positive self-awareness that person will be (Setianingrum & Setiowati, 2019).

Self-awareness plays an essential role in compliance with regulations, such as the COVID-19 health protocol established by the government. The primary key to breaking the chain of COVID-19 transmission is public awareness by implementing every regulation imposed by the government. If the community is not disciplined and has low understanding, breaking the chain of COVID-19 transmission will not work (Yatimah, Kustandi, Maulidina, Irnawan, & Andinnari, 2020).

Source of information, either formal or informal, plays an essential role in increasing situational awareness during public health emergency because the validity of the information sources can awaken the community's perception, and it plays a critical role in the implementation of protective behavior response (Qazi et al., 2020). Sabriana & Indrawan (2020) stated that there was a need for synchronization between the government and the community regarding policies. The policies require the role of society in it so that people can put confidence and self-awareness, which impacts the emergence of a voluntary feeling of the community to fight the threat of COVID-19. Strengthening social solidarity, responsibility, and cooperation between people is critical to breaking the chain of the COVID-19 transmission.

Public compliance towards the COVID-19 health protocol is still considered low because many people disobey the covid-19 prevention protocols, such as wearing masks, staying home during PSBB, etc (Mahardika, Trisiana, Widyastuti, Juhaena, & Kirani, 2020). Therefore, this study evaluates the magnitude risk of the knowledge, attitudes, and perceptions of COVID-19 health protocol after adopting new habits within East Java society.

## METHODS

This cross-sectional study was conducted between September to October 2020 in East Java. The dependent variable was compliance with the COVID-19 health protocol. The Ethics Commission approved the study of the Faculty of Dentistry, Airlangga University, on August 31, 2020 (389 / HRECC.FODM / VIII / 2020)

## Population and Sample

The working-age population, including women aged 15 to 49 and men aged 15-59 in East Java, were enrolled (Croft, Marshall, Allen, & Al, 2006). A sample size of 285 from the 25.611.224 population in East Java was obtained and was calculated using Lemeshow & David (1997) formulation with 5%  $\alpha$  and 80%  $\beta$ . The study used a participatory sampling method. People who domiciled in East Java, within working-age (women aged 15 to 49; men aged 15 to 59), and was consented to participate were included in the study.

## Data Management

A questionnaire of the study was distributed via google form online. The distributed questionnaire had passed the validity and reliability test on 27 respondents, with a validity value of 0.40-0.75 and a reliability value of 0.78.

The COVID-19 health protocol compliance assessed based on the COVID-19 prevention protocols. The protocols involve leaving the house only for urgent needs, wearing a mask, washing hands, taking a shower immediately after arriving home, maintaining distance, consuming vitamins, applying cough and sneezing etiquette, self-isolating when not fit, and looking for information about covid-19 (Ministry of Health RI, 2020). The independent variables of the study were knowledge, attitudes, and perceptions. Socio-demographic variables were also measured, including age, gender, and level of education. The practice variables consisted of 10 questions with a maximum point of 33. The knowledge variable consisted of 5 questions with a maximum point of 5, the attitude and perception variables consisted of 9 questions with a maximum point of 30.

The categorization of variables used the Likert scale by sing it into two categories, low and high, with the median cut-off point. The variable practice with a score below 33 was considered low, and the variable above 33 was high. The variable knowledge that with a score below four was low and above five was high. The variable attitudes and perceptions below 30 were low and above 30 were high. In the socio-demographic variable, age was divided into two categories, <20 years and >20 years. Gender was categorized into male and female. The level of education was categorized into low (neither completing elementary school nor junior high school) and high (completing high school and tertiary education). Data analyzed was bivariate with the chi-square test with a significance level of p-value <0.05.

## RESULTS

Based on the characteristics of respondents, most of the participants were above 20 years (92.63%). The highest level of education was tertiary education (76.49%), and the least was low education (1.05%). Most of the participants were women (84.91%) (Table 1).

The analysis results in Table 2 showed the independent variables associated with the COVID-19 health protocol compliance were attitude and perception ( $p$ -value=0.01). Knowledge did not significantly correlate with the dependent variable ( $p$ -value=0.58). Demographic variables, including gender, age, and level of education also did not show a correlation with the dependent variable, with  $p$ -value=0.61,  $p$ -value=0.66, and  $p$ -value = 1.00, respectively.

Attitude had a PR value of 1.61, meaning that respondents with low attitude are 1.61 times more significant to have low adherence to health protocols. There was a significant correlation between attitude with practice variables (Interval ratio 1.26-2.05). Perception had a PR value of 1.61, meaning that respondents with low perceptions are 1.61 times more significant to have high adherence to the health protocol. There was a significant correlation between attitude and practice variables, and the ratio interval was between 1.27 and 2.03.

Knowledge had a PR interval between 0.54 to 1.51, indicating no significant correlation between knowledge and the practice variable. Gender itself had a PR interval between 0.83 to 1.37, which means there was no significant correlation between the gender and the practice variable. Age had a PR interval between -0.12 to 3.56, which means there was no significant correlation between age and the practice variable. The level of education had a PR interval between 0.50 to 2.52, which means there was no significant correlation between the level of education and the practice variable.

## DISCUSSION

The results showed that attitude and perception about COVID-19 significantly correlated with adherence to health protocols. While knowledge, age, gender, and level of education did not show a significant correlation.

### The Correlation between Knowledge and Compliance toward COVID-19 Health Protocol

The knowledge level of participants about COVID-19 was classified high. It was also

because most of the participants had a high level of education. Similarly, Yanti et al (2020) stated that 99% of Indonesian were highly educated.

**Table 1.**  
Distribution of Respondent Characteristics in Districts/Cities in East Java Province

Variable	n	%
<b>Age (Year)</b>		
≥20	264	92.63
<20	21	7.36
<b>Sex</b>		
Male	43	15.09
Female	242	84.91
<b>Education</b>		
High	282	98.95
Low	3	1.05
<b>Knowledge</b>		
Low	13	4.57
High	272	95.43
<b>Attitude</b>		
Low	182	63.85
High	103	36.15
<b>Perception</b>		
Low	174	61.05
High	111	38.95
<b>Total</b>	<b>285</b>	<b>100.00</b>

This study showed no correlation between knowledge and compliance to the COVID-19 Health protocol. A study involving boarding students at the University of Advent Indonesia also suggested no relationship between knowledge and compliance toward COVID-19 health protocols ( $p$ -value 0.81). However, the participant knowledge about COVID-19 was categorized well, with an average score of 80.77 (Saputra & Simbolon, 2020).

In contrast to a study conducted in the Ngronggah community, it evaluated the compliance of wearing masks. It stated there was a significant correlation between knowledge and compliance with wearing a mask ( $p$ -value=0.01), the percentage of people with good knowledge was 69.35% (Sari & 'Atiqoh, 2020). This study is also in contrast with a study that stated most of the respondents had good knowledge (99.50%) and good compliance (79.50%) (Reuben, Danladi, Saleh, & Ejembi, 2020). Similarly, Usman et al (2020) also stated that knowledge had a positive correlation with adherence toward health protocol ( $r$ =0.29,  $p$ -value <0.01, compliance percentage score of 76.50%).

**Table 2.**

The Relationship between the Variables of Knowledge, Attitudes, and Perceptions with the Variable of Practices doing Health Protocols COVID-19

Variabel	Attitude (Adherence)				Total		p	PR (95%CI)
	Low		High		n	%		
	n	%	n	%				
<b>Age (Year)</b>								
< 20	16	76.19	5	23.81	21	100.00	0.66	1.85
≥ 20	153	57.95	111	42.05	264	100.00		(-0.12– 3.56)
<b>Sex</b>								
Male	27	62.79	16	37.21	43	100.00	0.61	1.07
Female	142	58.67	100	41.33	242	100.00		(0.83 –1.37)
<b>Education</b>								
Low	2	66.66	1	33.34	3	100.00	1.00	1.13
High	167	59.21	115	40.79	282	100.00		(0.50–2.52)
<b>Knowledge</b>								
Low	7	53.84	6	46.15	13	100.00	0.58	0.90
High	162	59.55	110	40.44	272	100.00		(0.54 – 1.51)
<b>Attitude</b>								
Low	125	68.68	57	31.31	182	100.00	0.01	1.61
High	44	42.71	59	57.28	103	100.00		(1.26 – 2.05)
<b>Perception</b>								
Low	121	69.54	53	30.45	174	100.00	0.01	1.61
High	48	43.24	63	56.75	111	100.00		(1.27 – 2.03)

We suspected that the lack of a correlation between knowledge and adherence toward the COVID-19 health protocol was because 59.20% of respondents had low adherence to the COVID-19 health protocol. Similarly, Saputra & Simbolon (2020) stated that their respondents had good knowledge but low action. Washing hands was a protocol with the most insufficient adherence, so the researcher suggests examining the students' obstacles in washing hands. The lack of correlation between knowledge and compliance with the COVID-19 health protocol was because good knowledge does not always impact good action. Still, the level of knowledge will affect behavior change which can become a new habit (Annisa, Hidajat, & Setiawati, 2019).

#### **The Correlation between Attitude and Compliance toward COVID-19 Health Protocol**

Attitude is a personal opinion in response to a particular situation (Kurniawan, Astalini, & Anggraini, 2018). The study found that most respondents' attitudes were low. The study also correlated to attitudes and compliance toward COVID-19 health protocols. Similarly, Wiranti, Sariatmi, & Kusumastuti (2020) obtained a p-value equal to 0.01 for attitude variables. An analytical study on awareness, attitudes, and actions during the COVID-19 pandemic in Saudi Arabia

conducted by Alahdal, Basingab, & Alotaibi (2020) also found that attitudes had a significant correlation with compliance toward prevention of COVID-19 transmission ( $r = 0.31$ ,  $p$ -value  $< 0.01$ ).

A study conducted on students from 10 universities in China also stated that there was a positive correlation between attitude and compliance in preventing transmission of COVID-19 ( $r = 0.32$ ,  $p$ -value  $< 0.05$ ) (Peng et al., 2020). Research conducted by Wiranti, Sariatmi, & Kusumastuti (2020) also showed a correlation between attitudes and compliance toward COVID-19 health protocol ( $p$ -value = 0.01). A trust factor plays a vital role in shaping a person's attitude to form attitudes. Trust in the established protocol will form attitudes towards this COVID-19 health protocol.

#### **The Correlation between Perception and Compliance toward COVID-19 Health Protocol**

Regarding perception, most of our participants had a low perception toward health protocol which means they had correct knowledge about COVID-19. The high level of knowledge of the participants may describe this good outcome. It may be because the participants had easy access to information about COVID-19. About 81.40% of participants followed the development of COVID-19 cases through several sources, including

television, social media, and messenger announcement from the task force. The analysis results showed a correlation between perception and compliance toward COVID-19 health protocol ( $p$ -value=0.01). Similarly, a study conducted on 263 people in Poland stated a positive correlation between perception and compliance toward health policy ( $R^2 = 0.06$ ;  $F [8,243] = 1.98$ ,  $p < 0.05$ ) (Zajenkowski, Jonason, Leniarska, & Kozakiewicz, 2020).

The results of an epidemiological survey conducted in North-Central Nigeria also showed a positive correlation of risk perception with health protocol adherence practices ( $r = 0.25$ ;  $p < 0.01$ ) (Abdelrahman, 2020). It may be because people who had good perceptions would also have good adherence, especially in avoiding infectious diseases (Suryaningrum, Nurjazuli, & Rahardjo, 2021).

### **The Correlation between Socio-Demographic Variable and Compliance toward COVID-19 Health Protocol**

We also evaluate the correlation of other variables such as socio-demographic variables, including age, sex and education, with the compliance toward COVID-19 health protocol. The study showed that it was not correlated with compliance with COVID-19 health protocol. Similarly, Prihati, Wirawati, & Supriyanti (2020) stated no significant correlation between age and sex with the participants' action in preventing COVID-19. In contrast, a study conducted in Saudi Arabia stated a positive correlation between the age of the participants and the practice of health protocols ( $p$ -value=0.01). The lack of correlation between age and compliance toward health protocol may occur because people aged 36-45 will have a good catching pattern and mindset (Sari et al., 2020). While in this study, it may be because the participants had the same proportion among ages.

The study result about the correlation between education level and health protocol compliance was opposite with a study conducted by Almutairi, Mustafa, Alessa, Almutairi, & Almaleh (2020), which reported a positive correlation between education level and health policy compliance practice ( $OR=1.7$ ,  $p$ -value=0.01). Similarly, Wiranti, Sriatmi, & Kusumastuti (2020) also reported a positive correlation between education level and compliance to health protocols, where higher education level would affect health protocol compliance ( $p = 0.04$ ). Also, Kuang, Ashraf, Das,

& Bicchieri (2020) reported that participants with higher education had better adherence ( $OR = 1.86$ , 95% CI: 1.17-2.97,  $p = 0.01$ ).

This study's lack of correlation between education level and compliance toward health protocols maybe because most respondents had high education levels but had poor implementation. Individual actions were influenced by formal and informal education, personal experience, environment, and access to media (Moudy & Syakurah, 2020).

### **Research Limitations**

Amount of respondents who had implemented the health protocols were still low, resulting in low compliance to health protocol. The independent variables which positively correlated with the dependent variable were attitudes and perceptions. Socio-demographic variables, including age, sex, and education level, did not correlate with compliance to the COVID-19 health protocol.

### **CONFLICT OF INTEREST**

The author declares that they have no conflict of interest.

### **AUTHOR CONTRIBUTIONS**

All authors have actively participated in this study, including instrument conceptualization and data analysis. SR contributed to writing and data analysis. EA contributed to reviewing and study supervision.

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